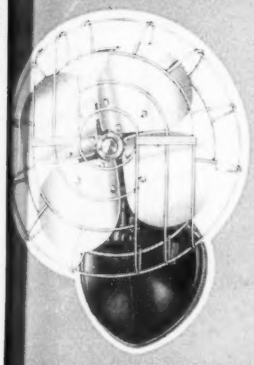
MAY, 1940

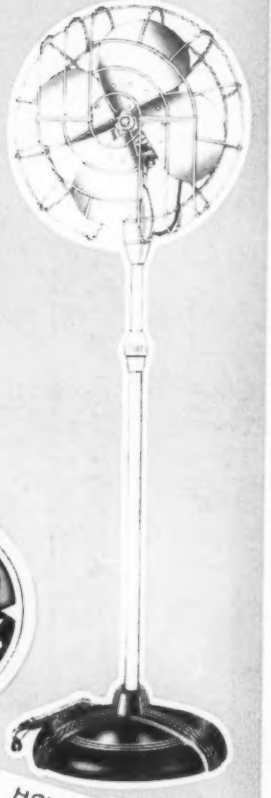
# ELECTRICAL SOUTH

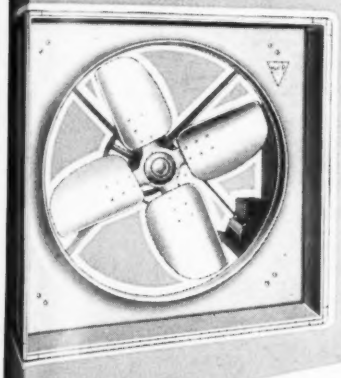
UNIVERSITY OF FLORIDA Library



*HUNTER — in its 53rd season of exclusive fan production is still making the world's finest quality fans and ventilating systems. Many types of installations throughout the United States of the new ZEPHAIR Cooling Units are being added daily.*

*Hotels, apartment houses, stores, churches, clubs and homes may now avail themselves of HUNTER engineering research and recommendations by writing or telegraphing. Cooperation will be generously afforded without obligation.*





HUNTER FAN & VENTILATING CO., Inc.

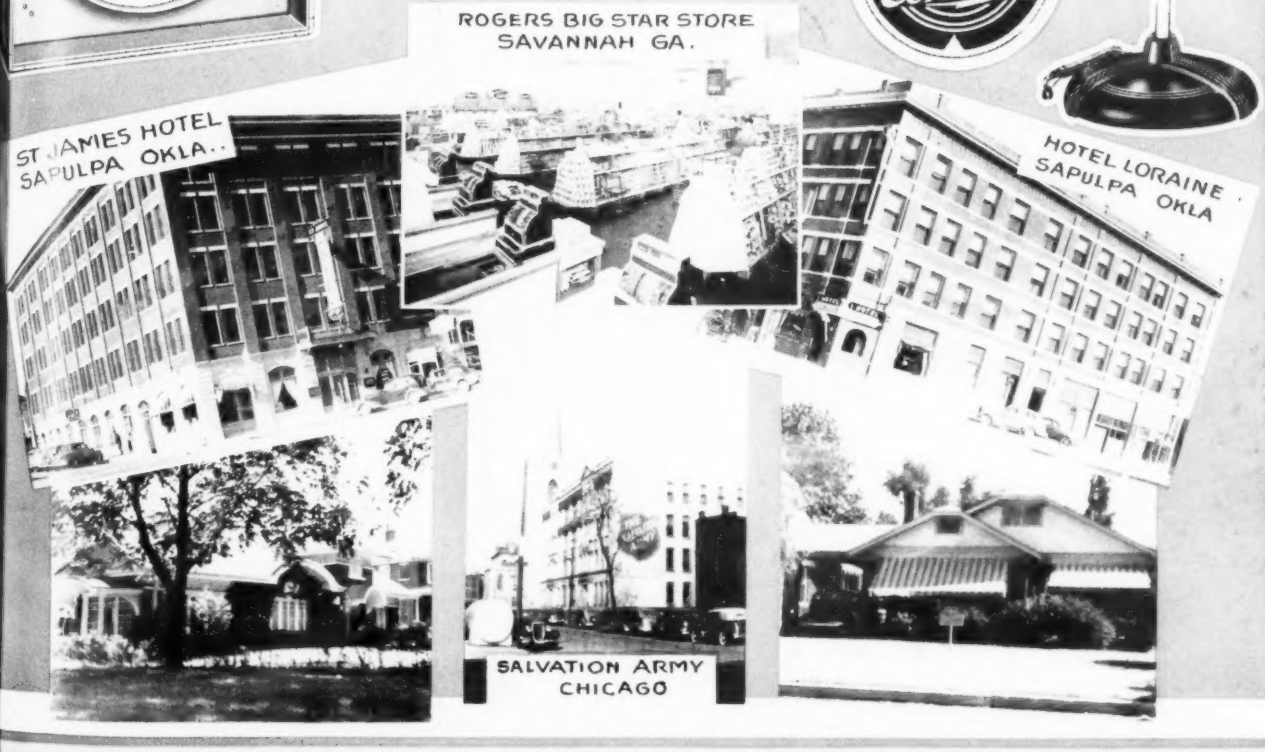
*Factory:* FULTON, N. Y.

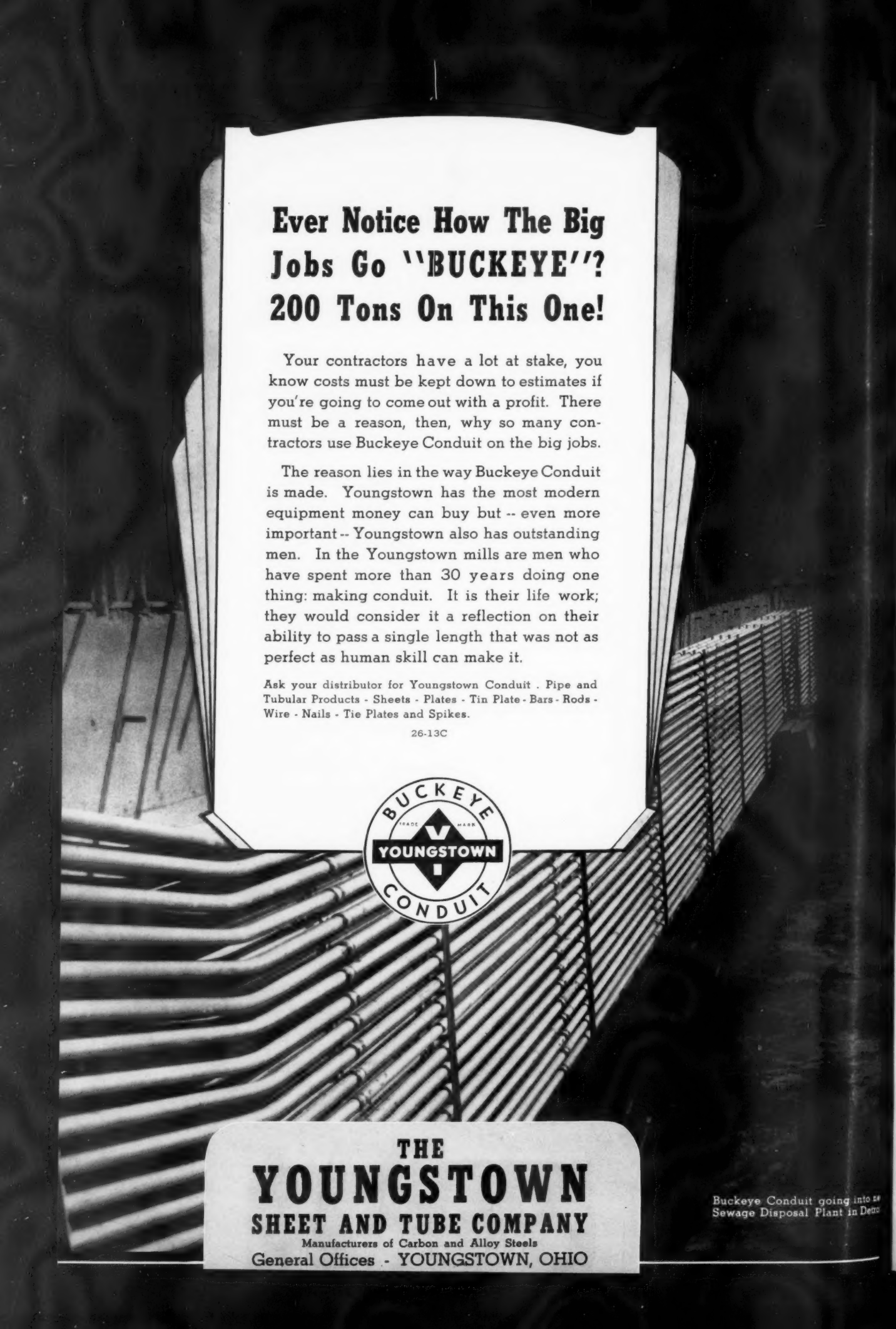
*General Sales Offices:* Memphis, Sterick Bldg.
*Eastern Sales Office:* New York, 92 Warren Street

*Sales Offices:*

| | | | |
|---|---|---|---|
| ATLANTA | CLEVELAND | HOUSTON | PHILADELPHIA |
| BOSTON | DALLAS | KANSAS CITY | PITTSBURGH |
| CHICAGO | DAVENPORT | LOS ANGELES | ST. LOUIS |
| | DETROIT | NEW ORLEANS | |

HUNTER Century





# Ever Notice How The Big Jobs Go "BUCKEYE"? 200 Tons On This One!

Your contractors have a lot at stake, you know costs must be kept down to estimates if you're going to come out with a profit. There must be a reason, then, why so many contractors use Buckeye Conduit on the big jobs.

The reason lies in the way Buckeye Conduit is made. Youngstown has the most modern equipment money can buy but -- even more important -- Youngstown also has outstanding men. In the Youngstown mills are men who have spent more than 30 years doing one thing: making conduit. It is their life work; they would consider it a reflection on their ability to pass a single length that was not as perfect as human skill can make it.

Ask your distributor for Youngstown Conduit . Pipe and Tubular Products - Sheets - Plates - Tin Plate - Bars - Rods - Wire - Nails - Tie Plates and Spikes.

26-13C

BUCKEYE TRADE MARK YOUNGSTOWN CONDUIT

THE
YOUNGSTOWN
SHEET AND TUBE COMPANY
Manufacturers of Carbon and Alloy Steels
General Offices - YOUNGSTOWN, OHIO

Buckeye Conduit going into a Sewage Disposal Plant in Detroit

# 16 ADVANTAGES OF HAZAKROME TYPE SN SMALL DIAMETER BUILDING WIRE

## Re-wiring Existing Raceways Practical with HAZAKROME Type SN

**For maximum loads combined with ease of installation, permanance and safety use HAZAKROME Type SN Small Diameter Building Wire and obtain these 16 advantages.**

1. A wide range of sizes (14 to 4/0) for both lighting and power circuits.
2. No braids or other fibrous coverings needed.
3. Insulation that will not deteriorate in air or sunlight.
4. Insulation that is non-inflammable.
5. Insulation that is oil resistant.
6. Smooth, glossy, lubricated surface makes pulling easy.
7. Small diameter takes up less room in conduit.
8. Can be operated at a copper temperature of 60° C.
9. Resists moisture, acids and alkalies.
10. Greater current carrying capacity.
11. Free stripping to make splicing and soldering easy.
12. High dielectric strength (over 700 volts/mil).
13. Tough insulation has tensile strength of 2000 lbs. per sq. in.
14. Will not readily collect dust and dirt.
15. Insulation is chemically stable and long aging.
16. Non-fading colored insulation for circuit identification—same color range as on Type R wires.

### 1. SMALL DIAMETER

**Comparative Outside Diameters**

| A. W. G. SIZE | Ordinary Type R Building Wire Approx. O.D. Inches | HAZAKROME Type SN Small Diameter Approx. O.D. Inches |
|---|---|---|
| 14 sol. | .190 | .130 |
| 12 " | .210 | .147 |
| 10 " | .230 | .168 |
| 8 " | .280 | .227 |
| 6 str. | .380 | .314 |
| 4 " | .450 | .363 |
| 2 " | .510 | .423 |
| 1 " | .570 | .496 |
| 1/0 " | .630 | .537 |
| 2/0 " | .670 | .583 |
| 3/0 " | .730 | .634 |
| 4/0 " | .780 | .692 |

The 60° C. maximum recommended operating temperature of HAZAKROME Type SN as against 50° C. for ordinary Type R wire means greater possible current loadings (see adjacent table).

### 2. GREATER LOADING

**Comparative Current Loadings**

| A. W. G. SIZE | Ordinary Type R Building Wire — Amperes | HAZAKROME Type SN Small Diameter — Amperes |
|---|---|---|
| 14 sol. | 15 | 18 |
| 12 " | 20 | 23 |
| 10 " | 25 | 31 |
| 8 " | 35 | 41 |
| 6 str. | 45 | 54 |
| 4 " | 60 | 72 |
| 2 " | 80 | 96 |
| 1 " | 91 | 110 |
| 1/0 " | 105 | 127 |
| 2/0 " | 120 | 145 |
| 3/0 " | 138 | 166 |
| 4/0 " | 160 | 193 |

The values shown above are for 1, 2, or 3 conductors in a single conduit as proposed for the 1940 National Electrical Code.

### 3. LARGER CONDUIT FILL

**% Area of Conduit**

| Type of Insulation | Number of Conductors 1 | 2 | 3 | 4 | Over 4 |
|---|---|---|---|---|---|
| Ordinary Type R | 53% | 31% | 43% | 40% | 40% |
| HAZAKROME Type SN | 60 | 40 | 50 | 50 | 50 |

As proposed for 1940 N. E. Code

**Before NOW Increased Conduit Capacity**

| Ordinary Type R Building Wire | HAZAKROME TYPE SN Small Diameter Building Wire | | |
|---|---|---|---|
| | | | |
| **3450 WATTS** 4 No. 14 Individual Neutral | **5700 WATTS** 4 No. 10 | **5800 WATTS** (or 8 No. 14) Individual Neutral | **6350 WATTS** (or 6 No. 12) |

**The Hazard Kit of Samples and complete information will help you sell re-wiring jobs. Write for it today.**

## HAZARD INSULATED WIRE WORKS

DIVISION OF THE OKONITE CO.

WORKS: WILKES-BARRE, PENNSYLVANIA

New York Chicago San Francisco St. Louis
Philadelphia Atlanta Dallas Los Angeles Detroit Boston
Washington Seattle Cleveland Pittsburgh Buffalo

ELECTRICAL SOUTH is published monthly by W. R. C. Smith Publishing Co., Marietta, Ga., and Atlanta, Ga., U. S. A.
Subscription rates United States and Possessions $1.00 for one year; $2.00 for three years; Canada $1.50 per year; Foreign Countries $2.00 per year
Entered as second class matter at postoffice, Marietta, Ga., under Act of March 3, 1879.
Volume 20 Number 5

**JUST OUT!**

**NEW G-E WATER HEATER SALES PRESENTATION BOOK**

Nothing else like it! Done in the new pictorial style. Tells and sells in an interesting and effective way. Get a sample copy *today*.

# . . . PLENTY OF SALES AMMUNITION FOR YOU

General Electric *writes* in *pictures* the powerful new selling story of G-E Water Heaters! Here's the way to talk to water heater prospects and sign 'em up. . . . Simply leaf through the new G-E Sales Presentation Book and watch interest lead to desire and action! It's a winner for stimulating water heater sales.

JUST ONE OF MANY NEW G-E WAYS TO MORE WATER HEATER BUSINESS

Ask your G-E Distributor to show you *all* of General Electric's new sales "props" and plans to get more water heater business this year . . . . See the sensational new sales film "We Like It Hot"—see the new "pictogaph" Sales Manual—see the new Wall Display Chart and Visualizer—see the new G-E Heater-Meter. All yours for more sales! Get the complete story *now*.

General Electric Appliance & Mdse. Dept., Bridgeport, Conn.

- The General Electric Water Heater line is *complete*. Sizes for every need—from 2 to 140 gal. capacity. Rectangular, round, table-top, wall-type models. Monel or galvanized. Single or twin units. (Popular-priced "Rocket" pin-up model illustrated).

All G-E Water Heaters have the famous CALROD *immersion-type* heating units. Calrod heats water by direct contact, cheapest electrical method known. Durable; will not scale or rust.

**GENERAL ELECTRIC**

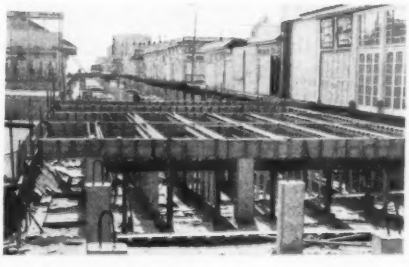
WALKERIZED

# DUALCOTE

## *A 14 month bath in the Atlantic Ocean satisfies this engineer.*

J. E. Olwell, City Electrician of Wildwood, New Jersey, found the Dualcote finish "good as new" underneath a year's growth of barnacles and seaweed.

Convinced that this new conduit stands salt water better than other types of galvanized material, Mr. Olwell is using Dualcote exclusively for the city's new boardwalk.



No matter whether it's salt water, acids or caustics that are causing the most trouble — you'll find Dualcote lasts longer and yet costs no more.

WALKER of Conshohocken, Pa.

*Ask your wholesaler or our nearest representative for a sample of this new material.*
E. B. GLENN—Bona Allen Bldg., Atlanta, Ga.
J. J. REILLY—1701 Massachusetts Ave., Washington, D. C.
E. W. STURDIVANT, 3306 Wichita St., Houston, Texas

# *"Through Every Step"*

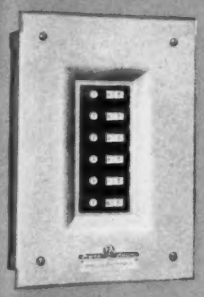
Limiting its activity solely to the making of electrical wires, cables and accessories, General Cable carries the processes of manufacture through every step in its own plants. General Cable rolls its own copper rods, draws its own wire, creates its own insulating compounds, and does all those many other things involved in the manufacture of electrical conductors. Through every step, quality is held to standards prescribed by the General Cable Research Department and maintained within the same exact limits in all company plants. Uniformity of quality has been an outstanding advantage of General Cable Wires and Cables.

# GENERAL CABLE

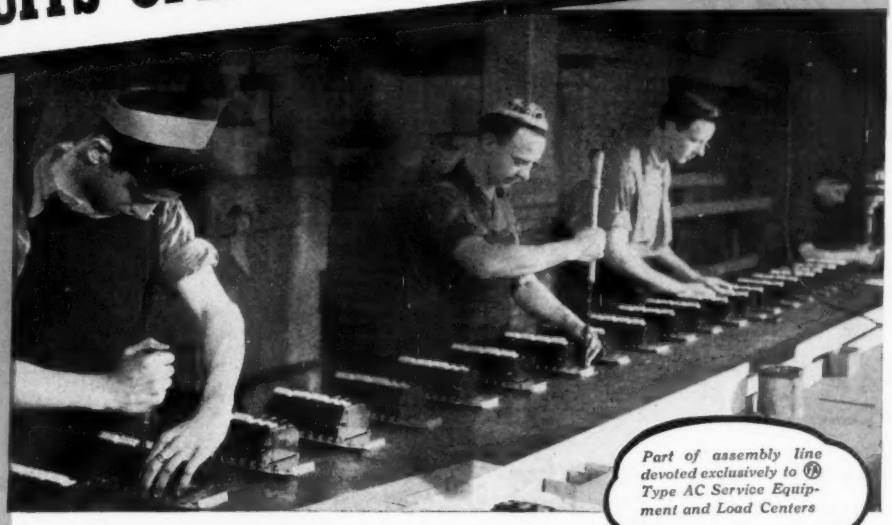
**BARE and INSULATED WIRES and CABLES for EVERY ELECTRICAL PURPOSE**

*General Cable Corporation Sales Offices:* ATLANTA · BOSTON · BUFFALO · CHICAGO · CINCINNATI · CLEVELAND · DALLAS · DETROIT KANSAS CITY (MO.) · LOS ANGELES · NEW YORK · PHILADELPHIA · PITTSBURGH · ROME (N.Y.) · ST. LOUIS · SAN FRANCISCO · SEATTLE · WASHINGTON (D.C.)

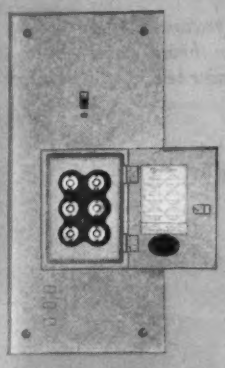
# NOW...INCREASED DEMANDS ON BRANCH CIRCUITS OPEN UP A NEW FIELD



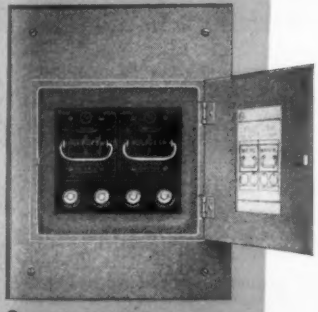
*Ⓕ Service Equipment with 6 S. P., AC Circuit Breakers*



*Part of assembly line devoted exclusively to Ⓕ Type AC Service Equipment and Load Centers*



*Ⓕ 6-Circuit Safety-type Service Equipment, with 30 Amp. Unfused Tumbler Main Switch. Bell Transformer space and Switch knockouts optional.*



*Ⓕ Service Equipment with Pull-out Type Main Switch and Range Circuit, and four Lighting Branch Circuits.*

In both new building and modernization, the question of adequate wiring presents new problems to the architect and the contractor. Thousands of new and remodeled homes will require the most modern types of service equipment, capable of carrying the heavier loads.

## Ⓕ SERVICE EQUIPMENT

meets these needs perfectly — because Ⓕ Products *do not stop at minimum standards.* They are *built better than necessary* — and designed to be ornamental as well as practical . . . Due to a complete standardization of interchangeable units, these products — of the highest grade — are manufactured on a quantity basis, and therefore priced reasonably.

### LET THE NEAREST Ⓕ SALES ENGINEER HELP YOU

Make it a practice to consult with him. The benefits of his long and specialized experience are yours for the asking. It is not unlikely that he can take work and worry from your shoulders, and help assure the estimated profits on many jobs. If you do not know where to find him, write us for his name and address . . . and ask for New Catalog No. 56 . . . Frank Adam Electric Company, St. Louis, Mo.

EST. 1891 THE SIGN OF A FA BETTER JOB

Frank Adam

SERVICE EQUIPMENT

FRANK ADAM ELECTRIC CO. ST. LOUIS, MO. U.S.A.

# A not so merry "MERRY-GO-ROUND"

## Cable oils sent to the rotating tray may be doomed, for here their ability to resist "breakdown" is determined

CAREFUL research keeps cable users from the predicament of the small boy who finds that the "merry-go-round" has broken down. Anaconda engineers continually are building greater resistance to "breakdown" into Anaconda wires and cables through tests such as the one shown here.

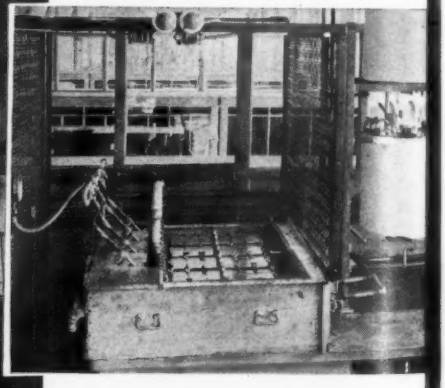
It is an oil aging oven in which there is less than ½° total temperature differential at all times. It is a severe test for the oils and only those that stand up... those that show the greatest chemical and electrical stability... are chosen. Further improvements in cable saturants are facilitated by laboratory methods of saturating tape wound cable models and subjecting them to cycles of elevated temperature and stress.

Painstaking research methods like these can mean but one thing to you . . . that wires and cables bearing the Anaconda trademark are of the highest quality.

ANACONDA from mine to consumer

40851

*This is a precision rotating-tray, air circul... aging oven through which Anaconda engi... determine best oils for cable saturants.*



*Above—cable model tanks mounted in ther... statically controlled bath with high-volt... vacuum and pressure entries.*

•

*Left—dielectric properties of cable models un... test are studied by means of this bridge.*

USE MODERN IMPROVED **Anaconda Wire & Cable**

ANACONDA WIRE & CABLE COMPANY, General Offices: 25 Broadway, New York City; Chicago Office: 20 North Wacker Drive

*Subsidiary of Anaconda Copper Mining Company. Sales Offices in Principal Cities*

MAY, 1940

Volume 20 No. 5

# ELECTRICAL SOUTH

J. C. MARTIN, Manager
W. E. COOGLER, Production Manager

*Editorial and Business Offices*
GRANT BUILDING
ATLANTA, GEORGIA

MEMBER OF A. B. P.
MEMBER OF A. B. C.

ANNUAL SUBSCRIPTION—$1.00
THREE YEARS—$2.00
CANADA—$1.50: FOREIGN—$2.00

Business Representatives:
L. E. ALLEN, 189 West Madison St., Chicago, Ill.
L. R. MCCARTY, 825 Winding Way, Merion, Pa.
W. S. CUSHION, 506 The Arcade, Cleveland, Ohio.
W. A. MCGEE, P. O. Box 562, Charlotte, N. C.

*Published Monthly by*
W. R. C. SMITH
PUBLISHING CO.
Marietta and Atlanta, Ga.

W. R. C. SMITH, *Chairman of Board,*
W. J. ROOKE, *President,*
T. W. MCALLISTER, *Vice-President and Editorial Director,*
E. W. O'BRIEN, *Vice-President,*
W. S. CUSHION, *Vice-President,*
R. W. PHILIP, *Vice-President,*
O. A. SHARPLESS, *Treasurer,*
J. C. MARTIN, *Secretary,*
E. L. PHILPOT, *Asst. Secretary and Treasurer*

*Publishers Also of*
COTTON
SOUTHERN HARDWARE
SOUTHERN AUTOMOTIVE JOURNAL
SOUTHERN POWER AND INDUSTRY

T. W. McALLISTER, Editorial Director CARL W. EVANS, Editor
NAT M. JOHNSON, Southwestern Editor

## Contents

| | |
|---|---|
| Sales Helps for Building Rewiring Market | 11 |
| Counter Cooking Campaign Scores in Houston | 14 |
| Sign Shop Investment Brings Good Return | 16 |
| Work Up Enthusiasm for Home Wiring | 17 |
| Ventilating Sales Boom in Texas | 19 |
| Commercial Refrigeration Rounds Out Volume | 20 |
| Two-Year Service Guarantee Offered on Radios | 22 |
| Florida Contractors Expand Association Activities | 23 |
| Understanding the National Electrical Code | 26 |
| Transformer Failures Prevented by Field Tests | 32 |
| Operating Details of Compressed-Air Breaker | 34 |
| Mobile Capacitor Unit for Emergency Service | 36 |

## Departments

| | |
|---|---|
| Electrical Appliance Service | 28 |
| Motor Rewinding and Repair | 30 |
| News of the Industry | 38 |

*Copyrighted 1940, W. R. C. Smith Publishing Co., Atlanta, Ga.*

Entered as second class matter at Marietta, Ga., U. S. A., under Act of March 3, 1879.

# MAXIMUM DEMAND MEASUREMENT

FOR SINGLE OR MULTIPLE (2, 3, or 4) OPERATION

FOR DIRECT OR ALTERNATING CURRENT

## WITH SANGAMO TYPE AG DEMAND METERS

THE Sangamo Type AG Demand Meter is an auxiliary device for indicating the maximum demand for one or more equal time intervals. Available in either direct or alternating current construction and operating from contacts in the watthour meter, the maximum demand from a single watthour meter can be measured or the maximum demand from two, three or four watthour meters can be totalized. Accurate and dependable, these demand meters offer a simple solution to many perplexing demand problems.

**SANGAMO ELECTRIC COMPANY** SPRINGFIELD ILLINOIS

# Electrical Business Trends

REPORTS from electrical manufacturers for the first quarter of 1940 reflect the continued improvement experienced during this period by the electrical industry.

* * *

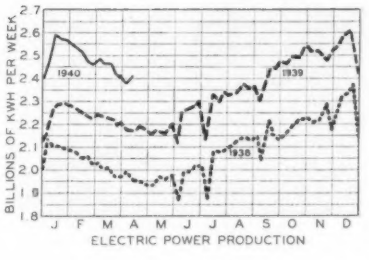
Sales billed by the General Electric Company during the first quarter of 1940 amounted to $85,949,194, compared with $68,537,269 during the same quarter last year, an increase of 25 per cent, President Charles E. Wilson announced to the stockholders of the company at their annual meeting April 16.

Profit available for dividends amounted to $11,951,450 or 41 cents a share, for the first quarter this year, compared with $7,373,431 or 26 cents a share, for the first quarter last year, an increase of 62 per cent.

Orders received during the first quarter of 1940 amounted to $97,490,047, compared with $86,882,953 for the same quarter of 1939, an increase of 12 per cent.

* * *

George H. Bucher, president of the Westinghouse Electric & Manufacturing Company, told stockholders at the annual meeting of the company on April 10 that the outlook for business was "very encouraging."




| Per Cent Changes 1940 Over 1939 | Week Ending Apr. 20 | Week Ending Apr. 13 |
|---|---|---|
| New England | + 8.2 | + 6.4 |
| Middle Atlantic | + 8.6 | +10.4 |
| Central Industrial | +12.9 | +14.5 |
| West Central | + 7.5 | + 8.0 |
| Southern States | +12.7 | +12.8 |
| Rock Mountain | +14.4 | +14.2 |
| Pacific Coast | + 0.7 | + 2.0 |
| Total | +10.1 | +11.4 |

Orders booked by the Westinghouse Company during the first three months of 1940, he said, were more than 30 per cent higher than during the same period last year: a total of $65,250,000 for the first quarter of 1940 as compared with $50,121,000 in January, February, and March of 1939.

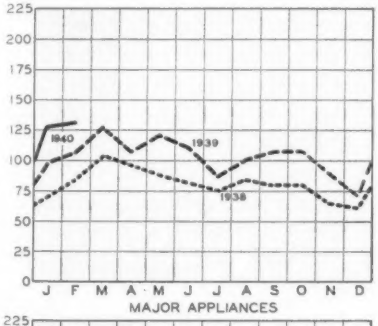
The company's backlog of unfilled orders was approximately $83,000,000 on March 31, a peak figure in the company's history. The inventory was about $66,000,000 on that date, as compared with $53,840,000 on March 31 last year, at which time unfilled orders were $46,900,000.

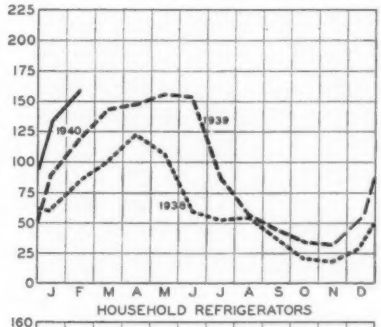
The payroll may reach $95,000,000 this year, at present rates. As of March 31, there were 51,000 employees; more than at any time since the autumn of 1937.

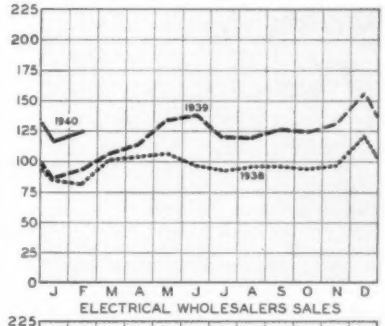
* * *

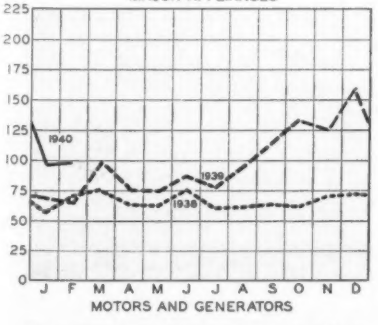
Continuing the recent upward trend in home appliance sales, Norge Division Borg-Warner Corporation reports February world shipments of 25,910 units, an increase of more than 95 per cent over volume recorded in February of last year. According to Howard

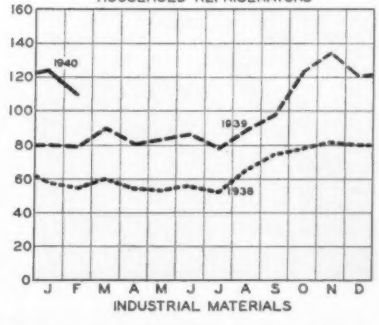
(*Continued on page* 60)

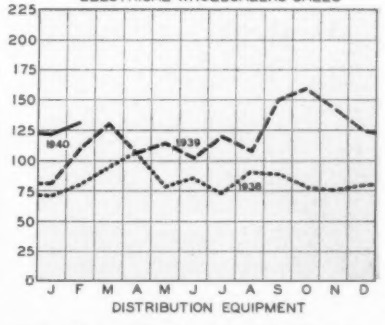


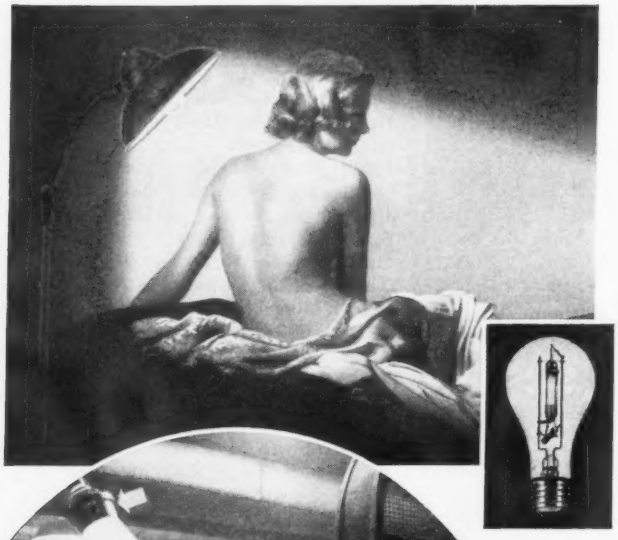



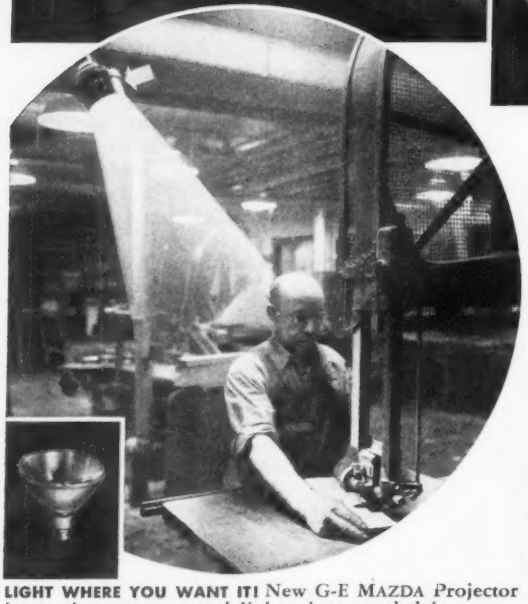

**All of the above indexes of electrical business activity are based on figures available from the National Electrical Manufacturers Association, except the index of electrical wholesalers' sales which is based on data published by the United States Department of Commerce. The indexes on motors and generators and distribution equipment are based on orders received, while the index on industrial materials, including such items as electrical porcelain, mica, vulcanized fiber and laminated products, is based on sales billed. The index on distribution equipment includes such items as high voltage insulators, paper cable, power switching equipment, power distribution transformers, and varnished cambric cable. The index on major appliances does not include refrigeration. The index on household refrigerators includes complete household refrigerators, separate household evaporators, and separate systems of 1/4 horsepower or less. The index on electric power production is based on data released by Edison Electric Institute. 1936 averages taken as 100%.**

# BEAUTY AND THE BEAST

## both benefit from new G-E Sunlamp!



**LADIES AND LITTLE PIGS** both benefit from a new inexpensive G-E sunlamp, one of many new-type lamps recently developed by General Electric. Using scarcely more current than an ordinary 100 watt bulb, it provides three times as much ultra-violet as noon June sunshine. Tests show that ultra-violet speeds growth in pigs; cures rickets and builds sound bones and teeth in human beings.



**LIGHT WHERE YOU WANT IT!** New G-E MAZDA Projector lamp gives concentrated light where needed in stores, factories, and homes. A lens, reflector, and filament are combined in one heat-resisting all-glass unit.

**SELLING BEGINS** at home with Kraft-Phenix Cheese Corporation, whose Chicago office has been light-conditioned with 300 and 500 watt G-E MAZDA lamps [illegible] indirect light. How can G-E ligh[illegible]an.

**DEATH CELL FOR LAMP BULBS** is this G-E Lamp Development Laboratory, where enough G-E MAZDA lamps burn night and day to light a town of 4000. These life tests help assure the increasingly high standards set by G-E research and development . . . one of the reasons why G-E MAZDA lamps *stay brighter longer.*

## *Filling empty sockets*

This ad is one of a new series G-E is running in Newsweek, Business Week and 11 industrial papers to sell Better Light for you.

**G-E MAZDA LAMPS**

**GENERAL ELECTRIC**

# *New Sales Helps for the*

# Building Rewiring Market

***Recognition of small-diameter wires in 1940 Code offers contractor a new sales approach for rewiring prospects.***

PROGRESSIVE electrical contractors and electric utility service salesmen have long recognized the tremendous market that exists in every city and town in the rewiring of the older commercial buildings. Lighting standards have doubled and tripled in the past ten years; air conditioning has become commonplace; and multitudinous new uses of electric service have increased electrical demands in store and office spaces; yet little could be done to modernize the wiring systems of these buildings or enable them to make full use of electric service because the conduits carrying the branch circuits and feeders are usually concealed or buried in masonry and the high cost of rewiring is difficult to justify.

### Code to Recognize New Wires

The advent of small-diameter building wire has brought the electrical contractor a new approach to this tremendous market. Four different types of small-diameter wire will be recognized in the 1940 National Electrical Code, if the recommendations of the Electrical Committee are approved by the National Fire Protection Association. With these wires, copper capacities in existing conduits can be more than doubled at comparatively little expense. Building owners and managers can be approached with concrete proposals to relight and rewire at a cost they can justify by the benefits obtained.

Although the 1940 edition of the National Electrical Code may not be formally adopted until later this year, most municipal electrical inspection authorities are permitting installations of these materials now on a trial installation basis. Local underwriters' associations, in most instances, have approved such installations since the first of this year.

Building authorities assert that 75 per cent of the office buildings of the country, erected prior to 1930, are at the present time lacking in wire capacity to meet the increasing demand of the electric energy load. It is granted that these new small-diameter wires will open up this tremendous, profitable market; but the contractor cannot expect that the availability alone of these new materials will unloose a flood of rewiring orders.

Aggressive selling will be required, as always, to land the contracts. But more than that, the contractor who wishes to capitalize this new source of business to his advantage must study carefully the economic and engineering problems introduced by it.

First, the new edition of the Code will recognize four types of small-diameter wire, which differ to some extent in characteristics, allowable current carrying capacity, price, etc. Most economical application will require complete familiarity with these new materials.

Second, the rewiring of existing buildings, for many contractors, will require a new type of engineering and planning. Considerable ingenuity will have to be exercised in adapting the new job to the old one, in order to utilize as much of the old equipment as possible. A further complication is that many department stores and other classes of commercial buildings will require that the work be done after regular closing hours, and that no visible evidence of the change over be left during business hours.

### Building Owners Interested

Even though the contractor is faced with the problem of selling modernized wiring, the burden is greatly reduced by the interest that is being exhibited by building owners and managers in these new wiring materials and the resulting lower cost of relighting and rewiring. The magazine *Buildings and Building Management*, leading publication in its field, has already published a number of articles on this new development and what it means to the building operator—articles that have been read by thousands of building owners and managers throughout the country. Among these thousands, the contractor will find many willing listeners when he presents his offer to survey and submit proposals.

The subject of rewiring with these new materials has already been discussed widely at meetings of the various local and regional associations of building owners and managers. A most detailed discussion of "Economics of Adequate Wiring" was presented only recently by J. F. Schwegmann, of Dallas Power and Light Company, before the Southwest Conference of Building Owners and Managers, in Dallas.

The light and power committee of the Building Owners and Managers Association of one city went so far as to prepare a comprehens-

ive anaylsis of a typical rewiring job to demonstrate to the building operators the actual meaning of small-diameter wire in dollars and cents. The committee chose a typical floor in a large office building and obtained estimates of the cost of rewiring both under requirements of the 1937 National Electrical Code, utilizing Type R wire, and under the provisions of the 1940 Code using the new type small-diameter wires.

### Comparison of Old and New

The existing circuits in this installation had a capacity of about 1 watt per square foot, arranged so that three offices having one outlet each were served by each circuit. Runs from the panelboard to the first office on each circuit consisted of two No. 12 wires, with a total of four No. 12 wires in each of six ¾-inch conduit runs. Connecting the three ceiling outlets on each circuit were two No. 14 wires in ½-inch conduit.

Both methods of rewiring were figured on the basis of one 1500-watt circuit per office, or 7½ watts per square foot, using four-wire, three-phase circuits. Comparative costs were based only on the conduit and wire and the replastering work necessary, since the cost of removing and replacing fixtures and connecting circuits to the panelboard would be the same in either case. Since this study was to indicate comparative costs of two basic methods, the question of additional outlets, etc., was eliminated.

The cost of rewiring with small-diameter wire amounted to $184.36 which included 4300 feet of No. 12 wire at $21.75 per thousand feet, or $93.52; and labor estimated at $90.84.

Cost of installing the necessary conduit and doing the job in the old way came to $407.69, which included the following items: 4300 feet of No. 12 Code grade wire at $12.65 per thousand feet, or $54.39; 325 feet of 1-inch conduit and 70 feet of ¾-inch flexible conduit, with fittings, $76.78; electrical labor, $126.52; and labor and material for replastering and refinishing ceiling, $150.

Thus a saving of $223.33, or 55 per cent, is shown in favor of the small-diameter wired job in spite of the fact that the cost of the small-diameter type wire, considered in this study, was 72 per cent greater than that of Code grade wire.

### Four Types of Wire

As mentioned previously, if the recommendations of the Electrical Committee are approved by the National Fire Protection Association, the 1940 Code will recognize four distinct types of small-diameter wire. These wires will be designated in the new Code as types RHT, RPT, UR, and SN. The type RHT wire may be used wherever type R wire is acceptable, in both new and existing raceways but the application of the other types, RPT, UR, and SN, is limited to rewiring for increased load where space is not available in raceways for conductors having the insulation thickness of type R conductors, and where it is impracticable to increase the size of the raceway due to structural conditions.

The following is a brief description of the various types of small-diameter wire and the sizes which the Code will recognize:

**Type RHT.** Conductors having a heat-resistant insulation with a thickness of not less than 1/32 inch for Nos. 14, 12, and 10, and not less than 3/64 inch for No. 8, and with a flame-retardant, moisture-resistant outer covering.

**Type RPT.** Rubber insulation of a grade not lower than type RP insulation, with a temperature limitation of 60° C. (140° F.), in sizes Nos. 14, 12, and 10, with an approved insulation thickness of not less than 1/32 inch, and with a flame-retardant, moisture-resistant outer fibrous covering.

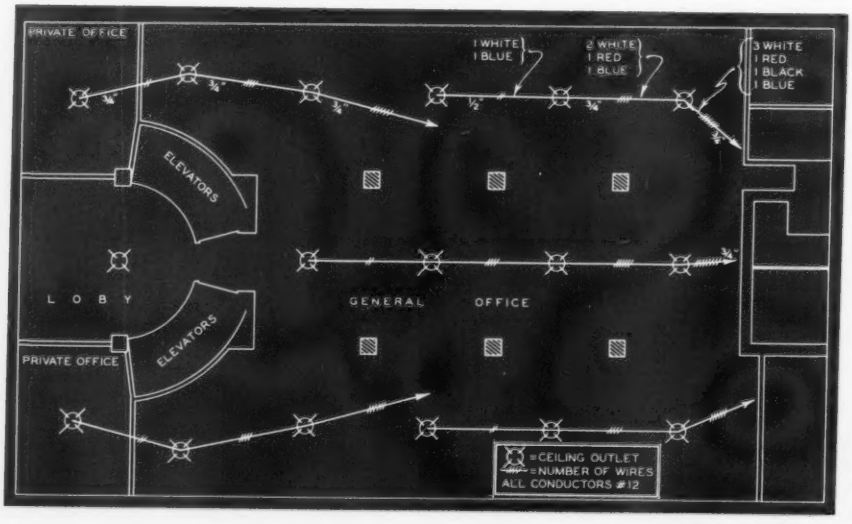
**Type UR.** Latex insulation of 90 per cent unmilled grainless rubber, with a temperature limitation of 60° C. (140° F.), in sizes Nos. 14, 12, and 10, with an insulation thickness of not less than .018 inch, and with a flame-retardant, outer fibrous covering.

**Type SN.** A flame-retardant, moisture-resistant approved solid synthetic insulation, with a temperature limitation of 60° C. (140° F.), in sizes Nos. 14 to 4/0. No outer fibrous covering is required. Insulation thickness varies with size: Nos. 14 to 10, 2/64 inch; No. 8, 3/64 inch; etc.

While space here does not permit a complete comparison of the characteristics of these different wires, the accompanying tabulations will give some idea of their relative size, current carrying capacity, conduit fill, etc., in comparison with Code Type R wire.

### Installations Being Made

One of the first rewiring installations utilizing small-diameter wire, in the South, is under way in the United Fruit Company Building of New Orleans. This installation, planned and installed




**Typical floor plan of the United Fruit Co. building, in New Orleans, which is being rewired with small-diameter wire. Each floor was originally served by five circuits, feeding 16 ceiling outlets, each containing one lamp of 200 or 300 watts. Through the use of small - diameter wire, it was possible to install a two-wire, No. 12 circuit to each ceiling outlet in existing conduits. Although only 500 watts per outlet will be used at present, the new circuits will permit the use of 2000 watts per outlet without overload or excessive voltage drop.**

**Small-diameter wire made it possible to build up this lighting installation at a relatively small cost. At the right is a view of the rewired fourth floor of the United Fruit Company building, in New Orleans. Individual No. 12 circuits were installed to each ceiling outlet in existing conduits, permitting the use of 2000 watt units in each fixture. At the present time, 500 watt units are in use. The new lighting presents a favorable contrast to the old, at left.**

by J. G. Prieto, of the same city, began with the rewiring of the fourth floor, which has been completed. It is anticipated that the entire building of eleven floors will be rewired by the end of the year.

### Load Greatly Increased

From the accompanying diagram, it will be noted that originally there were five circuits feeding the sixteen lights on this floor. These were divided into three lights per circuit on the wings and four lights on the central circuit. No. 12 wire was used for these circuits originally. The lamps were of 200 or 300 watt size.

To accomplish the rewiring, Mr. Prieto, the electrical contractor, installed a twelve circuit panel near the existing main distribution panel on the fourth floor in a pipe shaft. The main feeders to the existing distribution panel are 4/0 wire. The new distribution cabinet was connected to these main feeders by means of a 1/0 half tap to these 4/0 feeders. All connections between the main distribution cabinet and the 100-ampere fuse block, between the 100-ampere fuse block and the twelve circuit distribution cabinet, and between the twelve circuit cabinet and return to the main distribution cabinet was accomplished by using two-inch greenfield conduit.

It will be noted that all the new synthetic wiring was carried from the new distribution cabinet back to the old so as to allow this wire to be pulled into the existing conduits feeding from the old distribution cabinet.

Originally, the lights on the wings were controlled by means of 2 four-point and 2 three-point switches. These were removed and twelve single point switches were installed in their place. The four center lights were only controlled by means of switches in the old main distribution cabinet. The contractor installed canopy switches in the new light units. It will also be noted that it is now possible for this customer to use as large as a 2,000-watt lamp in each outlet in place of the 300 watt lamp which could be used in the old fixtures.

The thin wall wiring made it possible to build up this installation at a relatively small cost. In all, approximately 3,000 feet of the thin-wall, wire was used. This insulation is rated for 75 degrees Centigrade. The wire was bought in standard Code colors of white, red, black and blue so as to facilitate circuit checking at a later date in accordance with the latest Code rulings. For the present, 500-watt lamps have been installed in the new units.

**Overall Diameter, Solid Wire***

| Size | RHT | RPT | UR | SN | R |
|---|---|---|---|---|---|
| No. 14 | .162 | .162 | .130 | .130 | .200 |
| No. 12 | .179 | .179 | .147 | .147 | .220 |
| No. 10 | .200 | .200 | .168 | .168 | .240 |
| No. 8 | .261 | ** | ** | .227 | .300 |

*In inches. **Size not recognized.

**Current Carrying Capacity***

| Size | RHT | RPT | UR | SN | R |
|---|---|---|---|---|---|
| No. 14 | 22 | 18 | 18 | 18 | 15 |
| No. 12 | 27 | 23 | 23 | 23 | 20 |
| No. 10 | 37 | 31 | 31 | 31 | 25 |
| No. 8 | 49 | ** | ** | 41 | 35 |

*In amperes for not more than three conductors in raceway.
**Size not recognized.

**Size Conduit Required**

| Size | RHT | RPT | UR | SN | R |
|---|---|---|---|---|---|
| **(Three Conductors)** | | | | | |
| No. 14 | ½ | ½ | ½ | ½ | ½ |
| No. 12 | ½ | ½ | ½ | ½ | ½ |
| No. 10 | ½ | ½ | ½ | ½ | ¾ |
| No. 8 | ¾ | ** | ** | ½ | 1 |
| **(Five Conductors)** | | | | | |
| No. 14 | ½ | ½ | ½ | ½ | ¾ |
| No. 12 | ½ | ½ | ½ | ½ | ¾ |
| No. 10 | ¾ | ¾ | ½ | ½ | 1 |
| No. 8 | 1 | ** | ** | ¾ | 1¼ |
| **(Seven Conductors)** | | | | | |
| No. 14 | ¾ | ¾ | ½ | ½ | ¾ |
| No. 12 | ¾ | ¾ | ½ | ½ | 1 |
| No. 10 | ¾ | ¾ | ¾ | ¾ | 1¼ |
| No. 8 | 1 | ** | ** | 1 | 1¼ |

**Size not recognized.

### Promotion Possibilities

From a load building point of view the promotional possibilities in this field are especially attractive. Electric utility commercial department personnel can play an important part in developing the local market.

One of the best means by which the utility can lead the way is to modernize its own wiring with these new materials if wiring is inadequate and lighting below the recommended standards.

Personnel should be assigned to promote rewiring, and the services of a capable engineer should be made available to contractors and customers as a technical adviser, to assist them with economic and technical problems encountered.

The utility is in the best position, probably, to educate the local industry on the use of these materials, and should see that its own organization is familiar with them.

# Counter Cooking Campaign Scores in Houston

By C. N. Tunnell

RESTAURANT operators in Houston and other South Texas cities are business-minded sort of fellows. They are interested mainly in two factors: improved food and service to the customers; and lower operating cost for their businesses.

A number of these restaurant and lunch stand operators have installed electrical cooking equipment such as fry kettles, oyster stewers, waffle irons, grills, griddies, roll warmers, toasters, dish washers, coffee makers and numerous other electrical units. These installations have not been made speculatively; most of them have been made only after actual proof has been furnished to show where fellow restaurant operators in this market have lowered their cost of cooking, have speeded production, and have improved the quality of their products.

### Educational Campaign

An educational program in the restaurant and catering field has been sponsored by the Houston Lighting & Power Company, under the direction of J. D. Murphree, Jr., of the commercial sales promotion department.

The Houston Lighting & Power Company makes no direct sales in cooking equipment to the restaurants. All sales are directed through the restaurant and hotel supply firms; however, the educational ground work is done by this light and power distributing company.

*Electrified Business* is a four page publication, or mailing piece, that is used by the Houston Lighting & Power Company to reach 14,500 people monthly. This list is not all prospects—in fact, many are only suspects for light and power service. But the executives of this firm have found it profitable to mail educational literature to suspects, for when these people learn how electricity can be used more economically than their present heating or power service, they become actual prospects.

*Electrified Business* is not devoted exclusively to electrical cooking but in each issue there are pictures of one or more local restaurants and some story of how electrical equipment has cut costs and improved service. Other advertising of this nature includes display advertising in a hotel and restaurant publication covering the market. Also, window displays are used to good advantage.

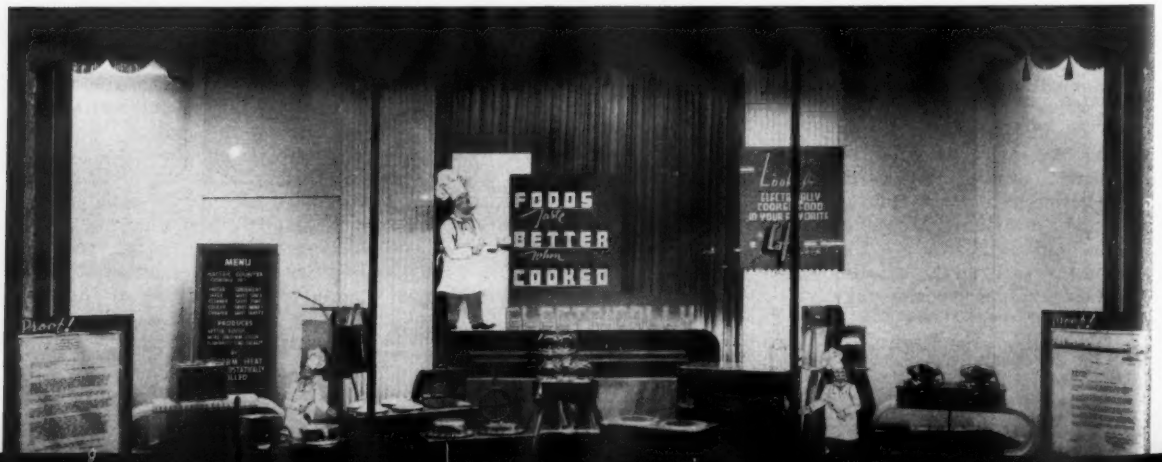
Window displays carry the story of local successes with electrical equipment. Actual letters from pleased restaurant operators are enlarged and photostat copies are displayed along with the pieces of equipment mentioned in the letters. Comparative operating costs are given, and prospects can see for themselves that electrical cooking has many advantages, economy being but one.

### All-Service Salesmen Used

The Houston Lighting & Power Company employs 15 all-service salesmen. These men handle all types of air conditioning problems, electrical power installations, lighting surveys and recommendations, etc. These all-service men merely develop the outlets and do the ground work, then they pass the actual sale along to some dealer in the field who can supply the equipment and make the installation. So cooking equipment is just another line with these salesmen; but as electrical cooking has its own problems, these men have been specially trained to know their merchandise.

They are shown why electrical frying saves from one-third to more than one-half of the fat . . . the story being that electrical fry kettles have automatically controlled temperature. Foods cooked in electrical fry kettles are not only cooked at uniform temperature, but the fat does not break

**Attractive window displays such as this and the one on the following page have done much to stimulate the sale of commercial counter cooking equipment in Houston. At each side of the display shown below is a large photo "blow up" of letters received by the Houston Lighting and Power Co. from satisfied purchasers.**



down or burn when used in this type unit.

Although the representatives of hotel and restaurant supply houses may not know all the advantages of electrical cooking equipment, these men are trained by Houston Lighting & Power Company representatives to know the possibilities of all such equipment. These firms are furnished with booklets that carry the story of electrical cooking, copies of authentic letters from local restaurant men setting out the savings made since switching to electrical cooking, photographs showing such equipment in use, and other timely information that enables dealer representatives to actually close sales.

Finding that too many people assume that electrical cooking is too expensive without actually checking up to know the facts, Mr. Murphree and his associates have put over a successful concentration drive that has not only been a revelation to the Texas restaurant industry, but it has been an eye-opener to these and other electrical men who didn't realize the possibilities in this field. When these all-service salesmen got to demonstrating selected cooking equipment, they found some startling facts, better sales material than they even suspected.

Linked with the advertising to the prospects, the Houston Lighting & Power Company sponsored a sales campaign for the 15 all-service salesmen. This campaign, the "Chef Special," was a contest lasting from January to April.

### Novel Contest Held

In addition to two prizes for the most counter cooking equipment sold, this contest was in the form of a 10-course dinner pay off. Each salesman was given a quota, divided into 10 units. His meal ticket consisted of 10 courses on the menu, the first being bread and butter, second cocktail, third soup, etc. At the end of the contest, salesmen ate according to what they had earned, starting with the first course and taking the meal in order of the menu.

Most of the all-service salesmen for the Houston Lighting & Power Company earned their full 10 course dinner weeks before the end of the concentration drive. Dealers were gratified with the contest and the campaign, for as a number of them admitted, they, too, had been overlooking this lucrative field.

The largest factor in selling more electrical counter cooking appliances has been the proof of savings. For example, Billie McKinnon, a veteran restaurant owner in Houston, was formerly using three cans of cooking oil a week. Since switching to an electrical fry kettle, he uses one can every eight days. He has replaced two gas kettles with one large electrical kettle; his saving is more than $4.00 a week.

Jack Howeth, owner of the Tower Drive Inn, in Houston, starts using his deep fat fryer at 8:30 each morning and cuts it off at 1 a.m. the following morning. He has made a reduction of 50 per cent in fat cost since using the electrical fry kettle. The fat does not break down or burn, the foods taste sweet and free of foreign or burnt flavors. A check on a Walgreen electric toaster showed that this store toasted 12,900 slices of bread for a cost of $1.48; Warren Brown of the Kit-Kat shop cooks 300 hamburgers an hour on a counter griddle, and uses a bun warmer at very low cost. Sivils, the drive-in restaurant that was recently featured in an issue of *Life* magazine with a Sivils waitress on the front cover, has replaced gas fry kettles with one 40-pound capacity electrical fry kettle and two 20-pound kettles. This firm uses an electrical griddle to cook hamburgers, finishing

(*Continued on page* 62)

# Sign Shop Investment Brings Good Return

***With a $2000 equipment investment and an aggressive sales plan, this contractor has developed an annual sign business volume of $12,000.***

TWO years ago, you could count the neon signs and lighting installations in McAlester, Oklahoma, on the fingers of one hand. And those had been installed by out-of-town firms, who had come in at the request of some progressive merchant. The installation costs were consequently excessive.

Mike Giacomo, McAlester electrical contractor, noticed this. He also noted that when a new neon sign did appear in the town, it was through the agency of some freelance salesman for a mail order house, equipped to offer only standardized patterns of very limited design. Consequently, interest in neon was at a vanishing point.

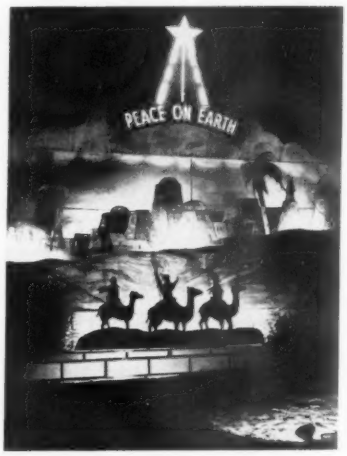
Giacomo's first move was to put in equipment costing some $2,000, to prepare him for specializing in outside and neon lighting. Instead of stocking standard, unimaginative patterns of ready-wrought neon tubing, he laid in a substantial stock of four-foot straight lengths, preparatory to making up signs to customers' specifications. Designs or lettering would be made up to the customers' approval on asbestos board, and the tubing heated and bent to conform to the pattern. The tubes are then closed by electrodes at both ends, and the unit bombarded with 32,000 volts to kill foreign gasses. After then evacuating it, the tube is filled with the rare gas.

The contractor's formula of attack was developed from an interview with a restaurant operator early in his pioneering of neon in McAlester. He suggested a neon sign to the restauranteur. "What'll it look like . . . like that?" asked the prospect, pointing disgustedly at a meagre stock sign across the street. Giacomo assured him that the sign could be made to look any way he wanted it. "I want to know how it'll look before I go into it," was the proprietor's final dictum.

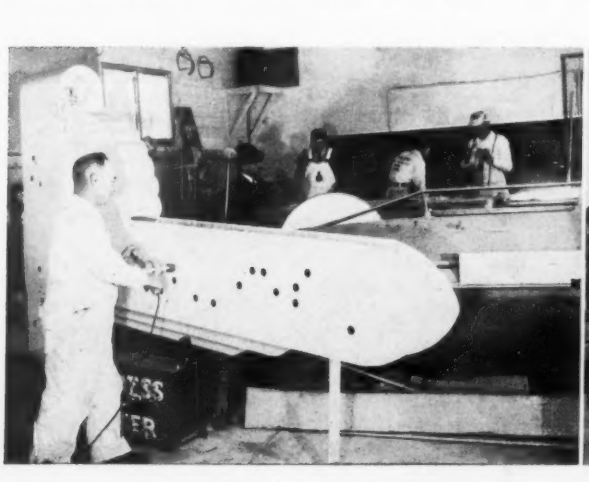
Giacomo's imagination had to come into play. He conceived a pattern which would be suitable and attractive for the restaurant, involving several colors, and had a water color sample made up, showing the lettering and pattern in exactly the colors he had in mind. This attractive lay-out he took to the prospect. The restaurant man stared at it. "You mean my sign can look *exactly* like that?" he asked. Giacomo assured him that it would. "Then go ahead, but I want it to look like that painting," said the prospect. The finished sign delighted him, and the same policy has been responsible for the installation of over a hundred neon signs in McAlester since.

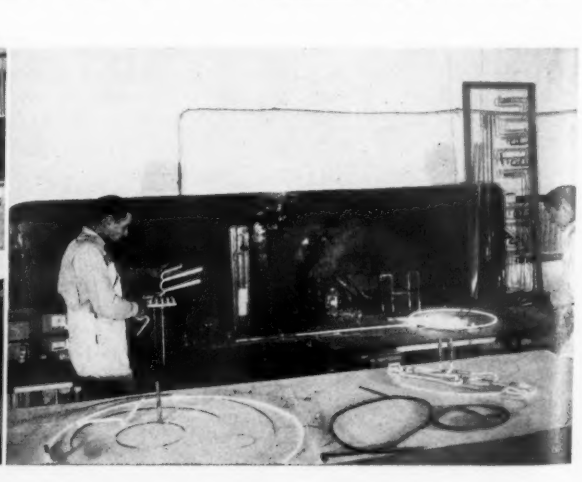
Realizing that in specializing in the field, it was necessary for him to take the burden of conception of lay-out and patterns from the prospects, Giacomo followed the procedure of spotting likely prospects for outside or advertising lighting, and preparing a sample sign in full colors for submission on approval. This form of canvassing ensured immediate attention from the prospect. If any changes were desired, they were

(*Continued on page* 62)




**Experience during the past year has supported Mike Giacomo's belief that a considerable volume of sign business can be developed in a small town if facilities are installed for making up signs to customers specifications, and new accounts are aggressively promoted. Below are scenes in Giacomo's busy shop in McAlester, Okla. Above is a Christmas display he designed.**





# Work Up Some Enthusiasm

## *For your prospect's new home and his wiring job, advises Walter S. Monroe.*

"IF YOU want to interest a prospective new home owner in your ability as a wiring contractor, you've got to work up some enthusiasm about the job."

That is the excellent advice of Walter S. Monroe, vice president of the Florida Association of Electrical Contractors, and owner of his own business in Tampa. He continued: "You can't expect the prospect to become interested unless you are interested—and if its to be just another wiring job then perhaps everybody will feel that way about it and maybe no one will be much interested.

"We are all tremendously interested in the electrical business at our place," Mr. Monroe continued. "We don't want just another wiring job, but we want to help work out ways of saving time, promoting efficiency and providing comfort for the customer. These are the lasting and satisfactory things," he said, "and these are the things vital to the customer."

It is one thing to advise others to go get business and still another thing to get it, according to Mr. Monroe, who is especially familiar with the problems of the average contractor, through his work with the state association. He is general manager of Monroe Electrical Company, of Tampa, and recently moved into a new building because of increased business.

"What to do after you get the prospect is equally as important as how to get him," Mr. Monroe said.

In the first place the successful contractor must be interested in his own business and enthusiastic about the future of electric homes. He should keep up with the new developments in the field, he said. Enthusiasm for good things is contagious and that is what breaks the ice between the contractor and the prospect.

Mr. Monroe said the contractor of today must have new ideas and newer ideas than most of his customers. The customer expects the up-to-date contractor to be a step or two ahead of him with new ideas, and whenever the contractor does not come forward with them, the customer is not only disappointed but feels he has been cheated.

"Here is a case in point," said Mr. Monroe, as he picked up a fresh blueprint from his desk. "Here's a $7,000 home, and the wiring was laid out by the architect. Actually, it is below the Code in outlets, but that is easily rectified.

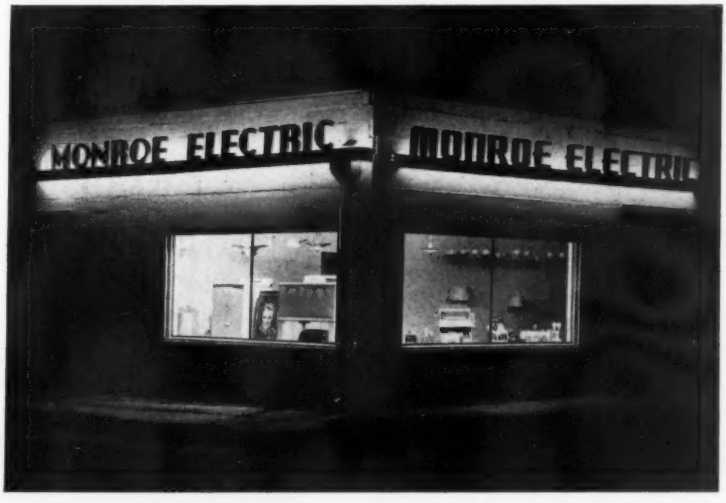
"Of particular importance is this long hall here. Three bedrooms open into the hall, as well as a bathroom. The telephone will be in the hall. Over here is the light switch. Now—the occupant of any of these bedrooms, when he has to answer the telephone at night, will have to come out into the dark hall and go down to the other end before he can switch on the light, so he can answer the phone. This is an age of electrical efficiency and when this home owner loses a few important telephone calls at night because it takes ten minutes to get the lights on and the party has hung up, he's going to be in a frame of mind to question very seriously the competency of everyone who had anything to do with building his house.

"While selling the owner of this house," Mr. Monroe continued, pointing to the blueprint, "I went over these plans with him and told him frankly that we would not be proud of the job if it was to be wired this way. Then I showed him where he could use two-way switches to advantage for the hall lights, and when we got through, the number of outlets had been increased by at least 25 per cent and he had not been loaded up with anything he did not actually need."

The big job of the electrical contractor is to be on the job, according to Mr. Monroe, who said, "It pays to pry into the ways and uses of the wiring as indicated on the plans and to remember that the time to save money and get the owner what he should have is at the beginning of a new home—not after it is finished.

"We not only show interest in everything about the wiring of a new house but we actually have a tremendous amount of enthusiasm about it at our place from the office boy to the shop foreman.

"Plans for many new homes," according to Mr. Monroe, "specify old-fashioned doorbells. There are




**This new home of the Monroe Electric Company, Tampa, is a splendid advertisement for the firm. This night view shows the attractive sign to advantage but does not indicate the size of the building which includes spacious offices and shops beyond the display floor.**

**Although Mr. Monroe is particularly enthusiastic about the possibilities in home wiring for the electrical contractor, he handles many commercial jobs. He has received many favorable comments on this church lighting installation, completed recently.**

probably some who do not care but every owner we have brought down to the shop for a chimes demonstration has bought them and then has thanked us for calling the matter to his attention at the proper time.

"These are the things," Mr. Monroe continued, "he'll always be glad he bought."

In their salesroom, a large display board has been built and wired on which are mounted ordinary door bells and several sets of chimes ranging in price from $1.00, up. The prospective customer presses the buttons and hears just how each one sounds. With an actual trial of this kind, the old style door bell is never bought. Mounted on the same board is an illuminated house number and push button plate. Nearly every new home builder buys one of these at the same time.

Saving of steps, which may be easily figured from most any house plans, is important. Mr. Monroe said that when he figures a job and checks the plans, he measures the steps to the switches and tries to visualize just how a person would go about living in the house. Nearly always, it is possible to find ways of saving many steps.

"Home buyers are no different from the rest of us," Mr. Monroe continued. "Whenever you can show them in plain black and white figures that much energy and work is saved, they are going to buy. Many times, just the simple relocation of switches will save hundreds of steps and add to the convenience of a new home.

"When the prospective home owner finds out you are actually interested in making a satisfactory job, they are willing to examine these things more closely and become receptive to changes and the additions of switches and outlets where needed.

"We have a display of electrical appliances, ranges and nearly everything that can be used in an electric kitchen, and it is not unusual for a customer for whom we have wired a new home to voluntarily ask us to show him what to put in the kitchen. Naturally this pleases us," Mr. Monroe said.

Contrary to general opinion Mr. Monroe says building permits are not a good source of prospects. Many times the contracts are all let by the time the building permit is issued and the names are hardly ever of any value to the solicitor for the wiring contractor.

He says in their case they get most of their best prospects from the confidential bulletins issued by the Tampa Builders Exchange, which lists all new buildings and gives the status of the job. They are listed under such departments as "To Start Soon," "Started," "Under Construction," and others.

Mr. Monroe does nearly all the selling for his organization. He gets his prospects and then calls on them in person as quickly as possible. There he states his case and tries to have something new and up-to-date to offer, which he has found to be one of the best ways of obtaining the interest of the new home builder.

Few people will want to build a house without giving consideration to everything that will make it a better place to live. Thus it is seen, that going to a prospect with something new, and being tremendously interested about it, will provide an atmosphere that simplifies getting the signatures on dotted lines.

**"George, that isn't the story of the development of the Little Wonder vacuum sweeper!"**

# Ventilating Sales Boom in Texas

***Educational work of last three years is now paying dividends in greater cooling and ventilating equipment sales.***

By N. J. Hanbury

"THIS spring inquiries about comfort cooling for homes are approximately 500 per cent greater than during the same season of last year," states Leon Barmann, of Lydick-Barmann Company, one of the leading dealers in air conditioning systems in Fort Worth, Texas.

"And as for installations, at this time last year (early April), we were waiting for the hot weather and possible sales to come along, while for some time past, now, we have been two weeks behind in our work. I mean the eight members of the installation crew, and not the salesmen, are behind; the salesmen are obviously far ahead of the rest of the employees.

"It is the groundwork—the systematic education of the public to the benefits of comfort cooling—that has been mostly responsible for this healthy interest in a commodity that has turned from a luxury to a necessity almost overnight."

The rushing business of the Lydick-Barmann Company is typical of other air conditioning firms in the city. And like Barmann, other executives in the field attribute the brisk activity of their businesses to the educational groundwork—done under the leadership of the Texas Electric Service Company during the past few seasons.

TESCO started fostering and showing to the public the good qualities of the comfort cooling "baby" almost since it was born.

**Educational work on comfort cooling and ventilating carried on in Texas during the last three years is beginning to pay dividends in increased sales, many dealers report. Texas Electric Service Co., of Fort Worth, has been an aggressive promoter of this merchandise. Copies of some of their current five-column advertisements are shown here. Note reference to dealers. This display directly over the company's cashier cage brought "comfort cooling" to the attention of thousands of customers. Reddy Kilowatt, in bed, takes turns at restless tossing about when there is no comfort cooling, and restfully sleeping while the comfort cooling system is operating.**

While it was still in its swaddling clothes, TESCO was an interested godmother, helping the infant's legitimate parents, the dealers, in all possible ways. So TESCO undertook to popularize comfort cooling in Fort Worth, in terms which the average home owner could understand and appreciate.

Until last year, its program included interpretative window displays in the TESCO office building down town, frequent newspaper advertisements (see illustrations), and engineering aid to dealers. Two TESCO engineers were always at the dealers' disposal, giving the dealers and their employees instructions in selling, installing and servicing cooling units, and helping installation crews. The engineers also organized and conducted classes and lectures for the men in the air conditioning field.

Of course, all these services were free, offered solely to promote sales and good will for the dealers and profitable load for the utility.

And the result was that more than two hundred homes in Fort Worth were equipped with comfort cooling in 1938, followed by a substantial increase in 1939, with this year promising to top last year's record by several hundred per cent. (*Continued on page* 29)

IT'S TIME—
TO PLAN FOR YOUR
SUMMER
COMFORT
Your Electric Service Brings You 24 Hour Comfort For a Few Cents a Day!
See Local Dealers Who Sell Electric Cooling Equipment
TEXAS ELECTRIC SERVICE COMPANY

IT'S TIME
TO PLAN FOR YOUR
SUMMER
COMFORT
Your Electric Service Brings You 24 Hour Comfort for Only a Few Cents a Day
See Local Dealers Who Sell Electric Cooling Equipment
AS ELECTRIC SERVICE COMPANY

IT'S TIME—
TO PLAN FOR YOUR
SUMMER
COMFORT
Your Electric Service Brings You 24 Hour Comfort For a Few Cents a Day!
See Local Dealers Who Sell Electric Cooling Equipment
TEXAS ELECTRIC SERVICE COMPANY

# Commercial Refrigeration Sales Round Out Dealer's Volume

By Ward Warburton

HARD to find would be two more wide-awake or aggressive refrigeration dealers than Cecil Kirby and William Tuttle, firm members of Kirby-Tuttle Company, Inc., Miami, Fla. As the result of their energy and enterprise, in less than two and a half years since they began business, they have sold refrigerating equipment to upwards of 20 large hotels and have made many smaller installations. In addition, they have put their firm's name well up near the top of the local utility's household appliance sales rating sheet.

Their sales of commercial units cover practically every type of refrigerating need to be found within their territory. It includes restaurants, yachts, clubs, florists, wholesale candy, dairies, sausage manufacturers, beverage bars and many other lines of business. Their customer list amounts almost to a business "Who's Who" roster of South Florida.

They keep track of all new construction and remodeling of existing buildings and maintain close touch with contractors and architects. It has taken more than initiative and foot-work, however, to set up the Kirby-Tuttle selling record. The main item in their "success secret" is that Messrs. Kirby and Tuttle know refrigeration. Often that gives them the edge on a tough deal. More than that, it makes for long term buyers' satisfaction and builds up "good will."

"We try," says Mr. Kirby, "as nearly as possible, to fit the customer's needs in any installation we sell. Sometimes a buyer with limited refrigeration experience thinks he should have a large box when a smaller one would serve his purpose—or the reverse. In either case, we induce him, if we can, to buy what best suits his requirement. More often than not, the customer will follow our advice and, after he has given his equipment a practical test, he is usually grateful.

"Business men in many lines are quite closely associated and the experience of each with any mechanical device soon becomes common knowledge to the seller's advantage, or otherwise."

The ability of its principals to analyze refrigeration problems and to offer competent advice on their solution has gotten Kirby-Tuttle some nice orders. One of the multiple installations, of which they are proudest, is at the Whitman Hotel, one of the show places at Miami Beach. Equipment here includes kitchen, bar and pastry

**Kirby-Tuttle Co., outstanding refrigeration dealers of Miami, would like to report that this is typical of the crowds that beat a path to their door to buy refrigeration —actually, its the crowd that gathers to hear the "man-on-the street" radio program which they sponsor, and which has identified their firm with "refrigeration."**

room units, a garbage freezer, and a box for the florist shop. They have sold several garbage freezers to better class hotels and restaurants.

For one wholesale and retail florist, who operates nurseries, greenhouses and several stores in the Greater Miami area, Kirby-Tuttle has installed approximately $6000 worth of equipment for various requirements. The latest of these is a refrigeration unit to check premature germination of plant bulbs.

### An Unusual Yacht Job

Messrs. Kirby and Tuttle explore the byways, as well as the highways, and off-trail business has proved a welcome addition to their sales volume. Among installations, which for one reason or another are out of the ordinary, is refrigerating equipment for the kitchen at the "camp" of Wm. Vanderbilt at Fisher's Island off Miami Beach. When Mr. Vanderbilt's ocean-going yacht "Alva" lies at her private dock, her Diesel engines provide necessary electric power; at other times, operation is by purchased power. The equipment, therefore, operates on both d-c and a-c supply, as occasion requires.

As another unusual installation, a refrigeration unit, housed in a specially built outside structure, prevents the waste of purchased ice at a popular Miami "dusk to dawn" night club. Previously, an ice company truck was obliged to make frequent trips, which sometimes caused delays in the club's service to guests.

"Walk-in boxes," of which Kirby-Tuttle has sold a large number of units, are constructed for the company under the supervision of a representative of a nationally-known insulation manufacturer. This type of business, according to Mr. Kirby, is best handled in that manner.

Pushing the sale of modernizing installations plays an important part in the promotional plans of this dealership. The replacement of out-moded equipment with new has proven particularly appealing to yacht owners and Kirby-Tuttle has sold upwards of 25 units for this purpose.

The partners watch closely for any expansion in the business of their customers, which offers an opportunity for the sale of additional equipment. Multiple unit installations for hotels, restaurants and florists have been built up in this way. Among these is a "cold plate preparation room" for the dining room at an exclusive Miami Beach hotel. Cold meats and salads reach dining guests ice cold, and the management is particularly well-pleased with its investment.

While Kirby and Tuttle specialize on the "commercial" phase of their business, they take their regular turns at "floor time" and thus keep in touch with the household appliance end, as well. They utilize any dull periods when they are "on the floor," to work the telephone in opening up new deals and follow up. Always courteous, never brusk, they have little time to devote to profitless "visiting."

Their strict attention to business sets an excellent example for the members of their sales force, consisting of four to six men, who devote their entire time to household appliance promotion, which is a major department and not a sideline. The firm usually ranks at least 3rd or 4th on the local utility's monthly volume listing.

A plan worked out by Kirby-Tuttle with the owner of a 33-unit apartment hotel nets them the sale of ten electric refrigerators and ten ranges, annually. Each year

(*Continued on page* 36)

**A good many reasons could be cited for the success of the Kirby-Tuttle Co., but the most important factor is that Mr. Kirby and Mr. Tuttle both *know* refrigeration. Their ability to analyze refrigeration problems has brought them many nice jobs. Shown above, at top, are a few of 12 compressors they have installed for the Whitman Hotel; in center, an installation sold to a florist for temperature and humidity control; below, kitchen of "Roadside Rest," a dine and dance restaurant seating 1500 guests, which Kirby-Tuttle "refrigerated."**

# Wide Range of Models and Two-Year Guarantee Featured by Radio Dealer

TWO of the most frequent reasons for losing sales have been eliminated by the Associated Radio Company, of Florida, which operates branches in Tampa, Lakeland, and Orlando. Customers who must compare "other makes before deciding" and those who wonder if the radio they like "will give good service"—all lose their sales resistance when they enter the Associated stores, for this aggressive firm features the full line of nearly all of the well-known makes and offers a two-year guarantee on every model.

The guarantee is a written agreement that the company will, without charge to the purchaser, keep the radio in first class condition for two years, making such adjustments or replacements as often as may be necessary, including parts, tubes, materials and labor; not including damage by the elements, breakage or cabinet damage in any form.

The guarantee is dependent upon the purchaser's fulfillment of agreed payment of each and every installment as stipulated in the conditional sale contract, and full compliance with all other requirements of the contract. Otherwise the guarantee automatically reverts to regular 90 day factory service warranty.

Service by the Orlando store seems to be adequately handled by two service men, one inside, and one outside man, even with a guarantee as broad as this one. The overhead cost for labor to maintain the two-year guarantee, apparently, is not much greater than it would be with the 90-day guarantee given by most dealers.

The effect of this "two-year service after the sale" is reflected in the statement of Welburn Guernsey, owner of the company, that 1939 was the most successful in the sixteen years the company has been in business.

All nationally advertised brands of radios are sold by the company, and all under the same two-year guarantee. Terms as low as one dollar down; large trade-in allowance—in some cases as high as fifty percent; exchange of a radio, after purchase, if not entirely satisfactory, for any other set; extensive newspaper advertising, and a huge stock of radios regularly carried in all stores, are other features of Associated Radio Company's sales presentations.

The company's former one-year guarantee was raised to the two-year guarantee now in effect. Any additional increased cost for serv-

(*Continued on page* 61)

**Terms of the Guarantee:**

(1) It is agreed that the above company for **two years** from date shown hereon shall render the following service **without charge** to the purchaser named herein, at Associated Radio Company's place of business.

(2) We hereby agree to keep the merchandise herein described in first class condition, making such adjustments or replacements as often as may be necessary, including parts, tubes, materials and labor; not including damage by the elements, breakage or cabinet damage in any form.

(3) Be it further understood that this guarantee in its entirety is fully dependent upon purchaser's fulfillment of agreed payment of each and every installment as stipulated in conditional sale contract, signed by the purchaser and full compliance with all other requirements of said contract. Otherwise this guarantee automatically reverts to regular 90 day factory service warranty.

**Advertisements of the Associated Radio Co., of Florida, feature to good advantage the company's policy of handling complete lines of all well-known makes and extending 2-year service guarantee.**

Why Look Elsewhere?
Associated SELLS THEM ALL
Associated is truly . . . RADIO HEADQUARTERS! We have over 2000 RADIOS now in stock
all 1940 models. No other store even approaches our huge selection, broad guarantee or eas
payment plan. ALL MAKES to select from, two-year guarantee, easy terms, large trade-in al
lowances and best of all . . . ASSOCIATED SAVES YOU MONEY!
• PHILCO
• ZENITH
• RCA VICTOR
• GENERAL ELEC.
• MAJESTIC
• CROSLEY, Etc.
Save $10 on this $29.95 GE
And Get . . . . These Articles FREE
Open Evenings Until Xmas
Buy This Beautiful . . . GENERAL ELECTRIC RADIO
Regular Price Radio ALONE $29.95
—NOW— $19.95
Including EIGHTEEN articles shown, FREE
$1 DOWN $1 Weekly
2 TWO YEAR GUARANTEE
2-YEAR GUARANTEE
Big, Busy Stores, ORLANDO, LAKELAND, TAMPA
ASSOCIATED RADIO CO.
143 N. ORANGE
Ph. 5300

# Florida Contractors to Expand Association's Activities

APPROVAL of a plan to employ a full-time paid secretary, who will travel through the state of Florida in the interest of increasing the association membership and other phases of association activities, was one of the actions taken by the Florida Association of Electrical Contractors and Dealers at their annual meeting in Orlando, April 1 and 2. More than a hundred members and guests were registered at the meeting for which headquarters were maintained in the San Juan Hotel.

Among other actions taken by the association at its business sessions was the adoption of a new plan to hold the annual convention in various Florida cities rather than in Orlando every year. The city of Tampa was selected tentatively as the meeting place for the next annual convention.

### New Officers Named

W. O. Henderson, chairman of the Jacksonville Chapter of the National Electrical Contractors Association, was elected president of the Florida Association for the forthcoming year, succeeding O. V. Scott, Miami, Florida, who has served as president for nearly three years. Walter Monroe, of Tampa, was re-elected vice-president and F. J. McGinnis, of Palm Beach, and R. C. Bigby, of Tampa, were re-elected as secretary and treasurer, respectively. No changes were made in the executive committee except that L. L. Hunt, of Jacksonville, was elected to fill the vacancy in the northern district brought about by Mr. Henderson's election as president. Other executive committeemen are: R. A. Ragsdale, northwestern district; W. S. Jefferis, central district; S. W. Shaw, western district; A. C. Wilson, eastern district; and Fred Stewart, southern district.

In addition to the closed business sessions, the meeting included a well arranged program of addresses, featuring a number of well known leaders in the electrical industry.

Lawrence W. Davis, general manager of N.E.C.A., addressed the group at its first morning session. Mr. Davis' message was awaited with considerable interest because of the unfavorable publicity given some groups of contractors as the result of federal indictments charging that some of their activities were violations of the Sherman Anti-Trust Law.

### Indictments Discussed

Mr. Davis pointed out that greatest attention in recent years had been given to protection against competition rather than to the development of individual efficiency in business. This is not objectionable so far as the program of an association does not eliminate free competition. He said that recent indictments have been studied carefully by N.E.C.A. and it has been found that there is no danger of prosecution against legitimate association activities such as fair trade agreements.

The real opportunity for the electrical contractor today, he pointed out, lies in the development of new business. The day of contractors waiting for work to be offered is past and there must be aggressive selling.

Mr. Davis said that the new president of N.E.C.A., Robert McChesney, recognized this fact and

**W. O. Henderson, center, assumes presidency of the Florida Association, as O. V. Scott relinquishes the position which he has filled successfully for several years. J. H. Dyer, looking on, has just completed a month of intensive work in Florida in the interest of the Association's membership. He is field representative of the National Electrical Contractors' Association. Mr. Henderson, incidentally, is general chairman of the committee in charge of arrangements for the national convention of N. E. C. A. to be held in Jacksonville next October.**

was determined that the new 1940 program will devote greatest emphasis to means of assisting contractors in developing new markets.

One of the first steps in this direction was the appointment of a sales development committee, headed by D. B. Clayton, of Birmingham, as chairman. This committee will undertake the development of a new contractors manual. Using the present Estimating Manual as a basis, the new manual will be called the N.E.C.A. Engineering and Sales Manual. It will be designed on a loose-leaf basis and every month contractors will receive new pages on some recent development—some phase of selling.

The sales section of the manual will include two distinct selling aids: part of this section will consist of concise treatment on the fundamentals of selling; the balance will be devoted to engineering developments and will include special sales material and data on such items as fluorescent lighting, small-diameter wire, etc. The keynote of this committee's work will be recognition that the contractor's problem is no longer how to get business away from competitors but how to develop enough business to go around!

Of particular interest to the contractors present was Mr. Davis' discussion of the several new committees that had been appointed to carry on the work of the national association. In addition to the sales development committee already mentioned, committees have been appointed to obtain statistics on the industry, study and report on legislation, study and make recommendations on the National Electrical Code, develop apprentice training plans and information, and develop better labor relations.

The new statistical committee has just sent out 9,000 questionnaires including thirty questions. It is hoped that the answers to these questionnaires will provide an authoritative cross section of the industry that can be presented to jobbers and manufacturers to show the position in the electrical industry occupied by the contractors.

The legislative committee has employed a very able attorney in Washington who will follow legislative developments.

The codes and standards committee, headed by George Andrae, will give attention to the problem of standardizing wiring parts and equipment. The committee will also study the National Electrical Code and represent the association in matters pertaining to the Code.

Referring to the objective of the committee of standardization of wiring parts and equipment, Mr. Davis pointed out that two things stand in the way of such standization: the Sherman Anti-Trust Act and the demand of customers. He said that there were more than 2500 different styles and types of boxes, for example. As long as there is a demand for so many different styles, there will be manufacturers willing to supply them. The first step of the committee will be to determine what types of materials are essential in the way of boxes, switches, etc. The committee will eventually present the

**R. C. Bigby, treasurer, and F. J. McGinnis, secretary, smile with satisfaction as their Association's most successful convention comes to an end. More than a hundred were in attendance.**

**Among those who addressed the Florida Association meeting were: front row, left to right, R. B. Roberts, general sales manager, Florida Power and Light; F. J. McGinnis, Association secretary; R. G. Ewell, Home and Farm Authority; A. Penn Denton, consulting engineer. Back row: J. H. Dyer, field representative of N. E. C. A.; Dr. George W. Allison, Edison Electric Institute; C. A. Britton, U. S. Dept. of Labor; O. V. Scott, Association president; and A. E. Schanuel, National Adequate Wiring Bureau. Others who addressed the meeting were not in photo.**

industry with a list of standardized items necessary to the trade.

The apprentice training committee, headed by J. W. Collins, of Chicago, will have as its objective the development of a training plan that will give young men a well rounded training fitting them to replace those leaving the industry.

Considered by Mr. Davis as one of the most important committees was the labor relations committee, the purpose of which is to bring about more effective relations between employer and employee.

In conclusion, Mr. Davis said that the entire contracting industry was looking forward to the national convention of the association in Jacksonville, October 20-23, and that the prospects were especially good for one of the best conventions in history.

Paul Geary, of the labor relations committee, followed Mr. Davis on the program. He outlined in considerable detail the objectives of the committee and reported on the progress to date.

Jack Dyer, scheduled to address the contractors in their closed business session, spoke briefly in the first open session. Just having completed a month of field work in Florida as a field representative of the N.E.C.A., Mr. Dyer congratulated the Florida Association on its splendid work and the fine spirit of cooperation found among its members.

A report from the association secretary, F. J. McGinnis, on the activities of the association during the past year, concluded the first session.

C. R. Long, Westinghouse Lamp Division, opened the second session with an entertaining demonstration and address on fluorescent lighting. Another special feature of this session was the presentation of a motion picture entitled "Copper From Mines to Market," made by the Phelps Dodge Copper Products Corporation.

### New Wire Described

Also heard at this session was an address by A. Penn Denton, consulting engineer, New York City, who spoke on "1940 Code Changes As They Affect the Use of Building Wire in Rigid Conduits." Mr. Penn Denton reviewed the requirements of the 1940 Code relating to building wire such as the sections on thinner insulations and the new temperature limitations that resulted from the exhaustive investigation made by a NEMA subcommittee on the determination of maximum permissible current carrying capacity of code insulated wires and cables for building purposes. Mr. Penn Denton was particularly enthusiastic about recent improvements in the quality of fibrous conductor coverings.

R. G. Ewell, of the Home and Farm Authority, discussed the part this government agency is playing in the financing of wiring installations in existing dwellings. He reported that the agency is now working with some 5,000 contractors throughout the country and that it is now self-supporting. The objective of the agency, he said, was to provide a means of purchasing wiring and appliances for home and farm use on low-payment plans. Payments are collected through utility companies along with light bills and collecting experience has been unusually good. According to Mr. Ewell, about 95% of all payments due are paid along with light bills leaving only about 5% that require some additional follow-up to complete collections.

Already, the plan is in operation

(*Continued on page* 60)

# Understanding and Using the National Electrical Code

By B. Z. Segall

New Orleans Public Service, Inc.
New Orleans, Louisiana

**IN this twelfth article of his series on the Code, Mr. Segall continues his discussion of the requirements relating to services, as covered in Article 230. Other articles in this series have appeared in foregoing issues, beginning in April, 1939.**

SERVICE equipment must be guarded and properly grounded. The general rule for guarding states that all live parts of the service equipment shall be enclosed. This enclosure must insure that these line parts are not exposed to accidental contact. The enclosure itself must fulfill two conditions:

1. It must have doors which give full access to the live parts; and
2. These doors must be provided with a locking or sealing device.

The one exception to this rule permits the installation of unenclosed live parts on switchboards, panelboards and controllers:

1. The board or controller must be accessible, to qualified persons, only; and
2. The board or controller must be located in a room or enclosure free from easily ignitable material.

It is interesting to note that most specifications today require panelboards, etc., to be of "dead front" construction. Enclosure of live parts of switchboards is more and more becoming the general rule rather than the exception.

The service grounding rules are covered in three main subdivisions, but the general rules of grounding, as set up in Article 250 of the Code, apply to service grounding.

The enclosure of service equipment must be properly grounded. However, the grounding may be omitted if all three of the following conditions are obtained for any installation:

1. The voltage to ground does not exceed 150 volts.
2. The enclosures are completely isolated from conducting surfaces.
3. The enclosures are so located that a person or any material contacting the enclosure is not in contact with other conducting surfaces.

To obtain fulfillment of these conditions would in general require quite an expense so that in the final analysis it is found that it is more practical to ground all enclosures.

The service raceway, if of metal, and the metal sheaths of service cables must be grounded. Underground metallic raceways do not have to be grounded if lead sheathed cables are used and if these sheaths are bonded to a continuous underground lead sheath cable system.

The use of flexible metallic conduit (BX, Greenfield, etc.) in a service raceway should be avoided. However, quite often it is necessary to insert a section of flexible conduit in a service conduit run. The resistance of flexible conduit is considerably higher per unit of length than is the same size of rigid conduit. In the event the insulation breaks down on one of the ungrounded conductors, the copper then makes contact with the metal raceway. The service conduit is electrically connected to the neutral service entrance conductor inside the service disconnect cabinet. The conduit line, therefore, offers under these conditions a relatively low resistance path for current flow from the accidentally grounded conductor and the neutral. If a short length of flexible metallic conduit is inserted in the service raceway, it will carry this relatively heavy

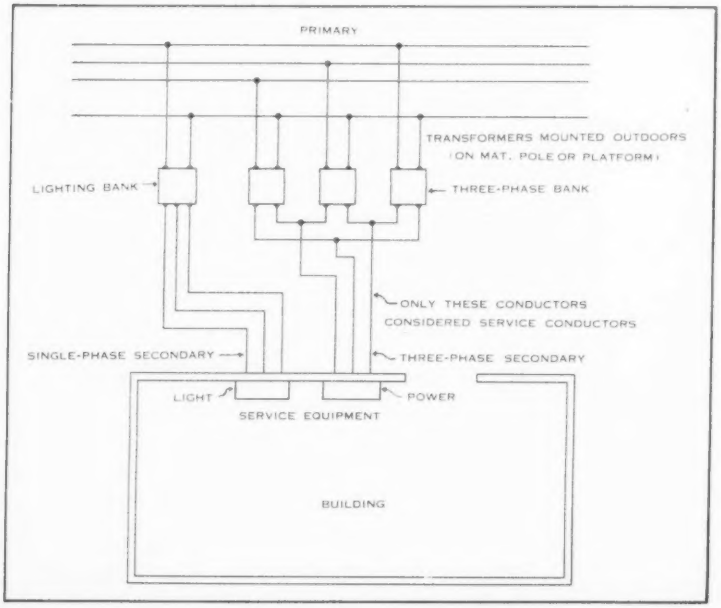



**Fig. 28. In the condition illustrated here and in Figures 29 and 30 on next page, the secondary conductors, not the primary conductors, are regarded as constituting the "service conductors." Here, the secondary drops from transformers mounted outdoors. Only when the secondary voltage is above 600 volts do the rules of sections 2386 to 2393 apply to the service and its related equipment.**

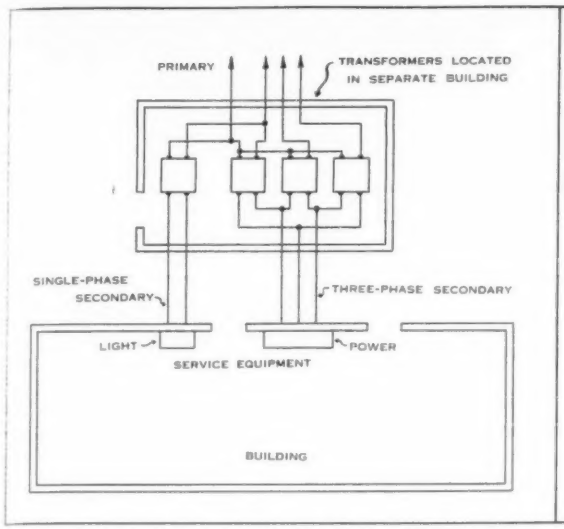



Fig. 29. When transformers are located in a separate building away from the main building, as shown here, only secondaries are considered as "service conductors," and their voltage determines which code rules apply.

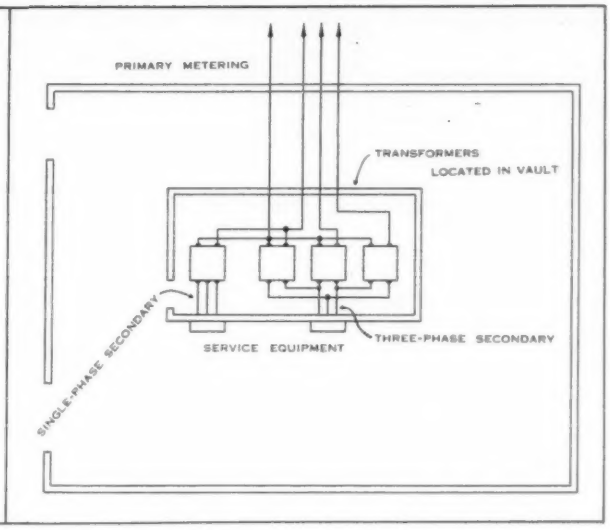



Fig. 30 When service is supplied from transformers in a vault in the building, secondaries are considered as "service conductors" if the vault is under the sole control of the electric supply company.

"short-circuit" current and may be heated to a high temperature. Quite a few fires have been traced to just this condition of installation.

The Code has set up construction standards to overcome the conditions outlined in the above paragraph. It requires that a low resistance shunt be installed in parallel with the section of flexible conduit. The rules require:

First, that the sections of rigid metal conduit interrupted be bonded together by a copper conductor and clamps or other approved means. It is important to note that the bond is to be made from rigid conduit end to rigid conduit end and not to any part of the flexible conduit section. If the flexible conduit extends to the service cabinet, then the bonding must be connected from the end of the rigid conduit to the grounding bushing or some other approved point within this cabinet.

Second, the minimum size of bond wire must be No. 8. While the Code does not state it, it must be assumed that this size will have to be increased for larger sizes of service raceways in accordance with the table set up in Section 2596f, the section stating the size of the grounding conductor for the service raceway.

Third, the conductor and bonding devices, i.e., clamps, etc., must be protected from mechanical injury.

The last sections of Article 230 deal entirely with the supplementary rules for the services exceeding 600 volts. It is important to keep in mind just what portion of the wiring system is to be considered the "service conductors." This is definitely established by the opening statements heading the rules for this section of Article 230. Figures 28, 29 and 30 illustrate the three conditions set up in the first part of this explanatory note. The last statement in this fine print note augments the exposition of the conditions by stating very definitely two principles of intent:

(1) The provisions of the sections relating to high voltage services do not apply to any equipment which is not directly connected to service conductors.

(2) These provisions do not, therefore, apply to the equipment installed in vaults under the sole control of the supply company.

The three types of transformer installations imply certain pertinent facts. As long as the transformers are located outdoors, or in separate buildings, as shown by Figures 28 and 29, respectively, the rules for services above 600 volt apply only to the secondary lines fed from the transformers. No primary control or protective equipment will be required. This applies equally as well to those installations which are owned and controlled entirely by the customer. However, any installation in a vault located within a building may require primary control and protective equipment. These must be installed if the vault and its equipment are under customer ownership and control.

As was stated in the beginning of the above discussion, these rules are supplementary requirements for those services operating at voltages above 600 volts. The general requirements of sections 2301 through 2307, the rules for underground services as set forth in sections 2311 through 2314, and the service drop conductors section 2321 through 2326 apply equally as well for these high voltage services. Where the individual conductors of a service rated above 600 volts enter a building the requirements that must be fulfilled are set forth in section 2335 for low voltage servcies. Grounding and guarding of these higher voltage services must be accomplished as outlined in sections 2381 and 2382 discussed above.

The conductors for a high voltage service above 600 volts may enter the building in the following manner:

(a) As open conductors supported on approved insulators. These lines must be kept 8 inches apart instead of 6 inches as required for low voltage services. If the service is rated above 600 volts but less than 2300, the wires must be kept at least 2 inches away from the surface wired over. Above 2300 volts this minimum distance is increased to 3 inches.

(b) As approved multiple conductor cables. If cable has a metal sheath the cable must terminate in a pothead or similar approved de-

(*Continued on page* 31)

APPLIANCE Service

# Good Service Organization Can Boost Washer Sales

By Allen Parker

IMPROPER use is undoubtedly the greatest cause of most washing machine trouble. Although it is primarily the salesman's responsibility to see that a purchaser has been properly instructed in the use of a washing machine and will therefore obtain proper service from it, the service man must be equally familiar with the proper methods of utilizing home laundry equipment so that he can determine readily when the customer's trouble is due to improper use rather than disorder in the equipment.

We present here a few suggestions that will be of value to the service engineer. And because proper use is such an important factor in getting best results from home laundry equipment, suggestions as to proper use will be included right along with service suggestions.

In a locality where the water is hard, a new user frequently uses too little soap, for which trouble the washer cannot be blamed. Additional soap added to the washing will help, but if the water is extremely hard, a water softener must be used. Also bad circulation of water with consequently poor results will be obtained from overloading, each machine having a capacity in pounds of clothes that it will satisfactorily wash.

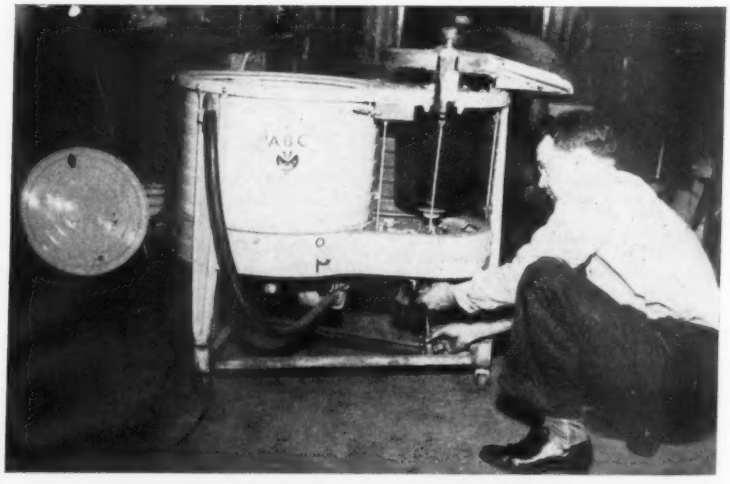
To exceed the marked water line, on many makes of machines, will not only produce poor results, but may let the water in the tub above the water line flow down the agitator shaft and housing into the gear crankcase. This causes disastrous results with the washer mechanism from poor or no lubrication, if allowed to run in this condition for any period of time. An early indication of this trouble is oil leakage from the crankcase. The leakage is caused by the oil in the crankcase, floating on top of the water and overflowing the filler plug.

On some washers, the breather plug on crankcase has a screw in it which must be removed when washer is put into operation, otherwise the crankcase will leak oil. Spinner type washers, that is, those using a spinner for drying purposes, should always be operated level in order to avoid excess vibration. These spinners will also vibrate excessively when they are not evenly loaded or the clothes not evenly distributed in the spinner cylinder.

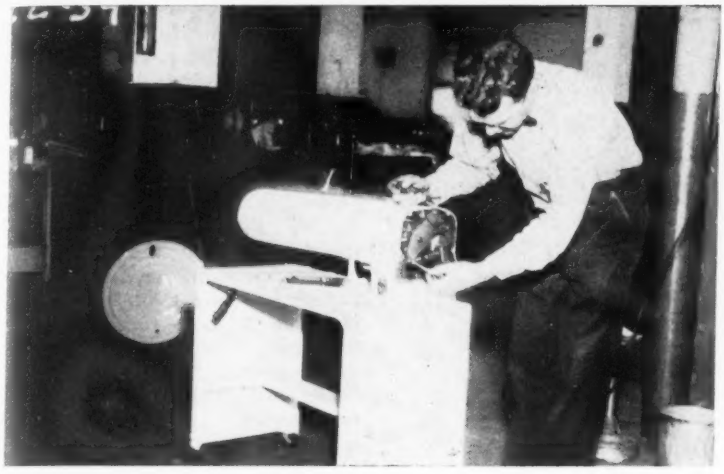
On washers with a top bearing on the spinner, it is not uncommon for a customer to allow the bearing to run dry of lubrication and, in such instances, the wear on the machine very soon makes it noisy. If this trouble is corrected at an early stage, it can be easily adjusted by properly lubricating and adjusting for the wear. However, if the machine runs very long without being corrected, an expensive repair job to again put the washer in good condition and eliminate the noise may result. This is because the spinner, being loose to wobble, soon wears the bottom bearing excessively, then putting the wear of the loose spinner directly on the gears in the gear case, making them noisy and necessitating their replacement in addition to correcting the spinner trouble before the noise can be eliminated.

This same trouble can occur on any spinner washer if clothes are continually dried in the spinner in an unbalanced condition. Clothes soiled with a black carbon like substance can be traced to the use of too much soap or the use of soap containing naptha. This results from a sludge forming at the bottom of the agitator or sometimes on the spinner basket shaft. The black sludge not only soils the clothes but if allowed to accumulate finally sticks the agitator or spinner until these parts become difficult to remove.

To prevent them from sticking and to keep them clean, the customer should be instructed to always remove them after using the machine and rinse them off with fresh water. Before replacing them, a small amount of white vaseline should be rubbed on the shafts to keep them lubricated and working freely. To remove an agitator or spinner that has become



**Adjusting the spinner on washing machine.**



**Correctly setting tension on an ironer.**

stuck, the service man should apply a mild heat which causes the aluminum agitator or spinner to expand away from the shaft enough to free it. In many cases this can be done by pouring very hot water over the agitator or spinner shaft housing.

### Water Pump Trouble

Clogged water pumps are a major service item on those washers using pumps, and most of the trouble is caused by negligence of the user. Strainers are installed in the drain in the tub to prevent foreign objects in the laundry, such as buttons, etc., from reaching the pump. However, it is still not uncommon to find nails, bobby pins and objects of similar shape that have gotten through the holes in the strainer and locked the pump tight.

The most frequent pump trouble is caused by lint from the clothes getting by the strainer and clogging the pump. This could be eliminated if the users would follow instructions to remove the lint several times from the top of the strainer as the tub is being drained. This can be done, since the lint clings to the top of the strainer as it accumulates until the water slowly draws it into the drain line and pump.

The customer could almost always eliminate pump trouble if after finishing the laundry work each time, they would connect the discharge hose from the washer pump to the city water pressure and flush lint which has drained into the pump back up into the tub where it can be removed. Of course this must be done immediately after use because the lint, soap, etc., hardens quickly so that it can not be easily removed. On one model washer this trouble appeared to be more prevalent than on other make machines, and we found that the trouble could be considerably reduced by adding an additional gasket to the face of the washer pump when it was disassembled which would give the impeller more operating room before it became clogged. The additional gasket did not appear to impair the efficiency of the pump more than a little if any.

### Dry Gaskets from Storage

Washers are sometimes stored away during vacations and other periods and are not used for weeks or months. A careful user would thoroughly rinse and dry out the machine which is a splendid thought, but when the washer is again put into use, it may leak at the pump and other gaskets because the gaskets have dried out and shrunk during the long period of inoperation. An easy repair for machines with this trouble is to pack the leak with Octagon soap which very nicely stops the leak until the water has had time to swell the gaskets again.

Washing machines using wringer rolls instead of the spinner type extractor sometimes experience trouble with the rolls slipping. This is caused by the soap getting to the rolls and causing them to get slippery. The remedy is to rinse them off with clean water and, after drying, sand them with coarse sand paper. The customer should always be instructed to release the tension on the rollers after using them to prevent the shape from becoming distorted. The cause of most breakage in wringers is due to the user placing too thick an article to be dried such as a blanket. Proper instructions should save this trouble.

Squeaking bearings in the wringer can quickly be eliminated by dipping the wooden bearings in hot parrafin. If this is not available, soap is a good temporary remedy for the bearing. Noisy wringer gears are often caused by the thrust washer bursting in gear housing and allowing the gear to run directly against the housing. The remedy is to simply replace the small thrust washer.

For a customer to get the maximum service from their washer, I would carefully instruct them to have the electric motor oiled twice a year. On washing machines not having a sealed crankcase, or on one that the manufacturer does not recommend the crankcase oil be changed except at times when it is disassembled, I would recommend that the oil be changed twice a year using S.A.E. No. 30 oil in the winter and S.A.E. No. 50 in the summer. The user should understand that she must rinse the tub out after each use and dry it thoroughly, removing the spinner and agitator so that this can better be done and greasing the agitator and spinner shaft with white vaseline in order to prevent corrosion. They can almost assure themselves of good crankcase service if they are careful never to have the water level above the marked water line.

---

## Ventilating Sales Boom in Texas

(*Continued from page* 19)

Although, as indicated by the popular interest, comfort cooling is fast coming of age, TESCO is still telling the public what wonderful things the youngster can do for the home. It is still running the five-column-by-twelve-inches ads in the newspapers, near which individual dealers run their own ads and displays. And it is still getting hundreds of inquiries, which are turned over to all the dealers in the city, so that they can follow them up and obtain orders on an impartial, competitive basis.

According to Barmann and other dealers, many of the sales made are to people whose names are secured from TESCO, after they had inquired about comfort cooling there.

MOTOR Service

# Connecting Diagrams for Lap Wound A-c Motors

## Part 11

By A. C. Roe

Railway Motor Engineer
Westinghouse Electric & Mfg. Co.

WITH this article are presented the eight-pole, two-and three-phase, two-parallel connections, for single voltage; arranged to permit the use of equalizer connections if desired. Fig. 31 is the two-phase connection: Fig. 32 is the three-phase star; and Fig. 33 is the three-phase delta. In addition, we will discuss how the stub connections are made with coils having the leads brought off the top.

The three-phase, two-parallel star connection, Fig. 32, provides a different star jumper arrangement than that used in the preceeding star connection diagrams, in that this arrangement has two separate star jumpers. It will be observed that the three groups forming each star jumper are mechanically opposite, and therefore on large stators it is possible to use this method to eliminate a long jumper. Care must be taken to connect the proper groups to each star, and a study of the schematic diagram will show that all the low numbered groups, as "8-10-12," form one star, while the large numbered groups, as "20-22-24," form the second separate star jumper. However, the separate star jumpers do not provide maximum protection from unbalanced magnetic circuits, and if equalizer connections are used, then the two star jumpers should be joined together.

The small schematic diagrams accompanying Figs. 31, 32 and 33 all carry light dotted lines which indicate the proper placing of additional jumpers to act as equalizer connections. On the two-phase diagram, Fig. 31, there would be six such jumpers, while in the three phase connections, Figs. 32 and 33, there would be nine equalizer jumpers for each diagram.

The two preceding articles of this series described how the coils were wound with the leads brought out from the top part of the coil, and with the leads straight out or bent down. In this article, we present Fig. M, having four sections a, b, c and d, which will illustrate the method used to make the stub connections with coils having the leads on top.

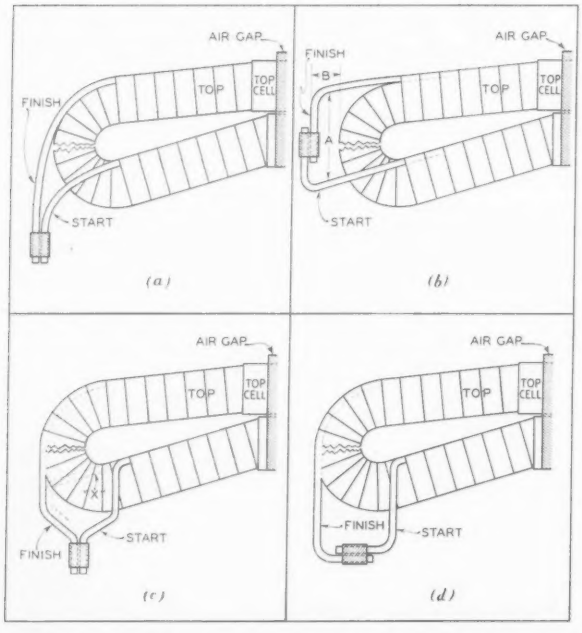



**Fig. M. These diagrams show details of making stub connections for coils with leads on top. (a) and (c) are examples of U-type stubs; (b) and (d) are straight type stubs.**

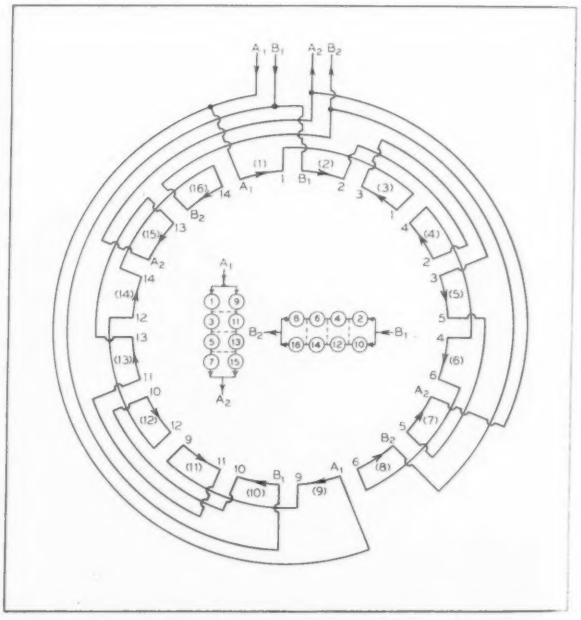


**Fig. 31. Diagram for eight-pole, two-phase, two-parallel connection with two leads. This arrangement is suitable for equalizing connections as shown by dotted lines.**

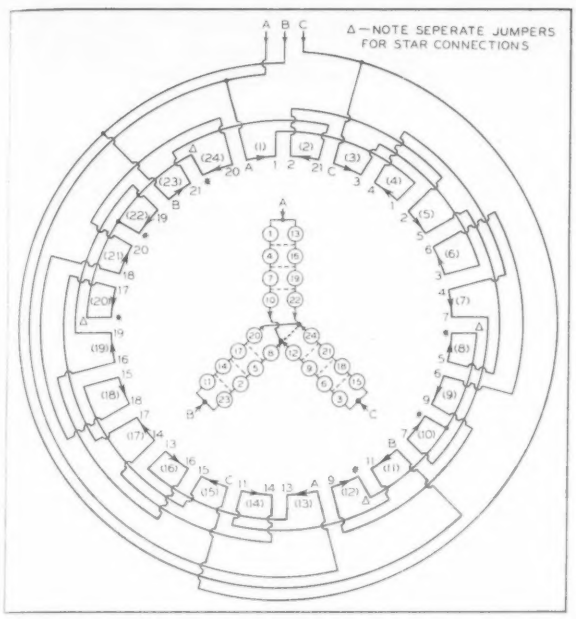



Fig. 32. Diagram for eight-pole, three-phase, two-parallel star connection with three leads. This arrangement is suitable for equalizing connections as shown by dotted lines.

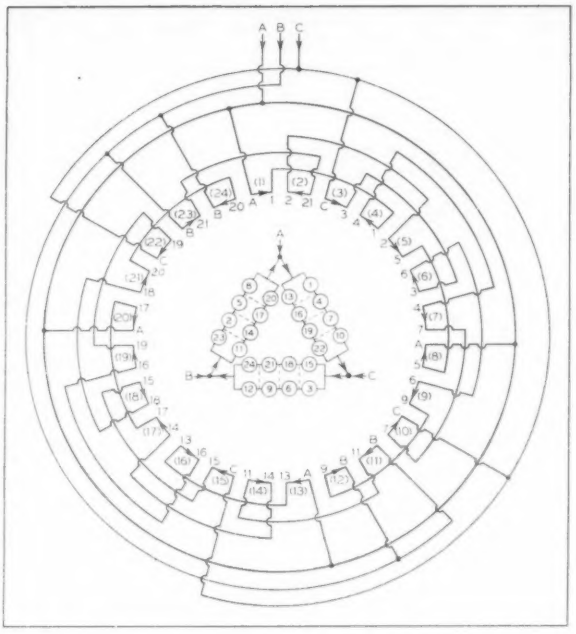



Fig. 33. Diagram for eight-pole, three-phose, two-parallel delta connection with three leads. This arrangement is suitable for equalizing connections shown by dotted lines.

There are two general types of stub connections and these are the U-type as shown in Figs. M-b and M-d while the second method shown in Figs. M-a and M-c is called the straight stub. The way the leads are brought out, as straight or bent down, free or fastened, affects the way the leads must be bent to make the stub joint.

The straignt stub with leads straight out is shown in Fig. M-a. In this case, the wires are brought together, a clip put on and the joint soldered. With the starting lead free, this type of stub connection can be pushed in between the diamond points of adjacent coils.

In Fig. M-c a straight stub connection is shown with the leads bent down. This method locates the stub under the bottom coil ends. With free leads, the starting lead could be bent out to meet the finish lead, as shown by the dotted line at X. This would place the stub further out and clear of tie rings, etc.

The U-type of stub connection is shown in Fig. M-b made with coils having the leads straight out. The leads can be free or fastened without affecting the making of a U stub. With leads straight out the U connection is brought closer to the end bells. The size of the U as indicated by "A" and "B," Figs. M-b can be varied to suit conditions.

A U-stub connection made with leads bent down is shown in Fig. M-b. This places the stub under the winding and provides more clearance between the end bell and winding.

In general, the straight stub is used for low voltage work. It is easy to insulate as tape can be wrapped around it. The U-stub is used mostly for high voltage machines and more time is required to tape the U-stub connection.

The next article will present the two- and four-parallel connecting diagrams, arranged for dual voltage with eight and nine leads. In addition, the discussion on making stub connections will be continued with coils having leads on the bottom.

## Understanding the Code

(*Continued from page* 27)

vice to protect cable.

(c) In rigid conduit. Here again it must be kept in mind that if metal sheathed cables are used the conduit lines must terminate in a pothead or equivalent unit as outlined in paragraph "b" above.

If the service conductors are to be extended as single conductors in a conduit system, or if open service conductors are to be used, the minimum size wire must be No. 6. It should be noted that this is an increase in size over the minimum size No. 8 (or No. 12 under special conditions) which is permitted or low voltage services, 600 volts or less. The service conductors may be No. 8 if they are made up as approved service entrance cable.

High voltage services must be supported more rigidly than services rated below 600 volts. The conductors, insulators, etc., must have sufficient strength and be securely installed to definitely insure adequate clearances between the conductors, supports and surrounding materials and equipment, in case a heavy short circuit current flows through the service. To effectively guard these high voltage services and to insure to a great extent adequate stability of the conductors, it is best to install the lines underground and bring them up directly to the service protective equipment within the building. (This discussion of the Code rules that apply to services exceeding 600 volts will be concluded in next issue.)

# ENGINEERING SECTION

# Transformer Failures Prevented By Field Power Factor Tests

By E. W. Whitmer

American Gas and Electric Service Corp., New York City

CAN failures in transformer windings be prevented by the correction of faulty conditions indicated by power factor tests?

Most answers to this question have been indirect in that no appreciable data showing a clear-cut relation between test values and failures have, until recently, been available for publication. It should, of course, be understood that such conditions as load, lightning, and maintenance have some relation to transformer winding failures. It must also be recognized that failures can result from such things as mechanical defects which may not, necessarily, be indicated by power factor test.

Our experience, however, in testing and maintaining some 4000 transformers, has shown that a large percentage of winding failures is caused by weaknesses which have developed in the insulation as a result of moisture acquired in service. These weaknesses can be detected by field power factor tests and failures prevented by correcting faulty conditions.

In order to obtain reliable information, any relation between test values and service operation should be based on experience over a period of years with a large number of transformers. Such data as these have been made available by tests made on the American Gas and Electric system during the past eight years or so.

### Equipment Tested

We made some field power factor tests of transformer winding insulation as early as 1931, and a limited routine testing program was started in the fall of 1933. The number of transformers tested each year has been approximately as follows:

| No. | Year |
|---|---|
| 200 | 1931 |
| 200 | 1933 |
| 1100 | 1934 |
| 1000 | 1935 |
| 1150 | 1936 |
| 1150 | 1937 |
| 1260 | 1938 |
| 1400 | 1939 |

Some of these transformers have only been tested once, while others have been tested two, three, or four times. About half of these transformers are in the power or distribution class, while the others are used for metering or control purposes. Most of them are located in stations and include very large power transformers as well as smaller sizes, in voltages from 132 kv to 11 kv.

As previously stated, there are some 4000 transformers in the group, and a record of their performance in service has been kept since the tests were started. Since the available data show the operating and test records for some eight years on a relatively large group of equipment, any conclusions drawn from the data should be of a reliable nature.

### Experience Data

Our practice in recent years has been to remove transformers from service when their winding insulation showed a power factor in the order of 5%, or above, at 20° C. In the early stages of the test game, before the full significance of power factor tests was known, some transformers with high power factor winding insulation were left in service and a few failures occurred. Since that time, a few additional failures took place in high power factor transformers before arrangements to correct the faults could be carried out, while two or three failures occurred as a result of faulty spare units which happened to be placed in service during emergency.

All of the above mentioned failures are shown in Table I. They represent exceptional cases in that such failures have almost always been prevented by our practice during recent years which has been to promptly recondition or

**Table I**

**Winding Failures in Transformers Which Were Shown by Previous Tests to Have High Power Factor Insulation (1931-1939)**

| Ref. No. | Kva | Kv | % P. F. at 20° C. | Remarks |
|---|---|---|---|---|
| 1 | 250 | 44 | 6.4 | Failed 18 months after testing. |
| 2 | 300 | 27 | 5.8 | Failed 2 days after testing. |
| 3 | 300 | 27 | 5.4 | Failed 1 year after testing. |
| 4 | 2750 | 44 | 8.6 | Failed 2 months after testing. |
| 5 | 5 | 33 | 7.4 | Failed 3 weeks after testing. |
| 6 | 150 | 44 | 5.9 | Failed 5½ years after testing. |
| 7 | 500 | 23 | 5.4 | Failed 8 months after testing. |
| 8 | 100 | 44 | 8.6 | Failed 21 months after testing. |
| 9 | C.T. | 33 | 18.0 | Failed 5 months after testing. |
| 10 | 75 | 44 | 17.0 | Spare unit failed 2 hours after placing in service. |
| 11 | 75 | 44 | 21.0 | Spare unit failed 5 days after placing in service. |
| 12 | 385 | 13.2 | 7.0 | Failed 22 months after testing. |
| 13 | 100 | 22 | 28.0 | Failed 1 day after testing. |
| 14 | 150 | 44 | 23.0 | Spare unit failed shortly after placing in service. |

remove from service any transformer found to have high power factor winding insulation.

The data in Table I are useful in showing that a large percentage of transformers with high power factor winding insulation will fail if left in service. It should, of course, be recognized that some transformers with power factors above 5% may have a degree of overinsulation and remain in service for several years but this, in general, has not been our experience.

This is further brought out by additional analysis of test and operating records. This shows that only some 0.5% of transformers found to have power factors below 5% at 20° C. failed in service over a period of eight years or so. In contrast to this record, about 1.0% of a group of transformers which had never been power factor tested failed during one year.

In fact, the failures shown in Table I represent about 5.6% of the total number of transformers which have been found to have power factors above 5% even though very few of these were left in service for an appreciable period after they were found to test bad. This information is rather conclusive in showing that high power factor winding insulation is likely to fail in service, and further reference will be made regarding the prevention of such failures.

### Cause of High Power Factor

It has been found that moisture is the cause of high power factor in more than 90% of transformer windings which have faulty insulation. In most other instances, high test values have been caused by high power factor oil, while a few faults have been caused by carbon or open circuited windings. It is rather important to note that most of the faults located in transformer winding insulations had not been found during other routine maintenance work.

Megger readings, in general, have been unsatisfactory in locating some of the faults in transformer windings. Oil samples drawn from the bottom of the transformers and tested periodically, in a great majority of the cases. have not shown faults such as moisture in the winding insulation. This is an important observation in that some maintenance men have for years had the idea that any moisture which gets into a transformer will be detected in oil samples drawn from the bottom of the tank.

As a result of our experience in power factor testing and maintaining transformers, we have found that moisture in the bottom of the tank usually indicates that there is some moisture in winding insulation. However, the absence of moisture in oil drawn from the bottom of the tank does not by any means indicate that the winding insulation is dry enough for dependable operation. The power factor test has been found to be a very reliable indicator of moisture in transformer winding insulation.

**Table II**

**The Correction of Faulty Conditions in Transformer Winding Insulation as Indicated by Power Factor Tests.**

| Ref. No. | Kva | Kv | % P. F. at 20° C. As Found | % P. C. at 20° C. As Left | Remarks |
|---|---|---|---|---|---|
| 1 | 2500 | 27 | 7.2 | 1.9 | Windings dried in oven. |
| 2 | 2000 | 66 | 6.1 | 3.0 | Dried by short circuit method. |
| 3 | 25 | 13.2 | 27 | 2.3 | Windings dried in oven. |
| 4 | 100 | 22 | 14 | 4.1 | Dried by short circuit method. |
| 5 | PT | 22 | 11.8 | 2.0 | Windings dried in oven. |
| 6 | PT | 27 | 9.3 | 3.3 | Replaced old oil which had P.F. of 12.7%. |
| 7 | 1000 | 33 | 6.4 | 3.8 | Winding condition improved after breathers were rearranged and old gaskets replaced. |

### Faults Corrected

It has been possible to correct practically all winding faults indicated by power factor tests. In the few exceptional cases where carbon has been found in the transformer, it has, of course, been necessary to make a thorough investigation in order to determine the location and extent of damages which resulted at the time carbon was formed.

The cause of high power factor oil is not always definitely known, nor is it known exactly whether or not this oil causes the transformer to be unsafe for operation. Some oil with exceptionally high power factor has been replaced, and in such instances, the power factor of the winding insulation has been reduced appreciably. In general, if the oil has a higher power factor than is indicated by a test on the winding, replacement of the oil will appreciably decrease the winding power factor.

Since most faults indicated by power factor tests are the result of moisture in the winding insulation, it becomes necessary to dry out some transformers. This has usually been done by the conventional short circuit or oven drying methods. We have found, however, that some of the free breathing power and distribution transformers will dry out as a result of their own operating heat if good breathers are installed on them and faulty gaskets eliminated. Examples of transformers which were dried out by various methods are shown in Table II.

Out of the 4000 transformers which we have tested, some 250 have been found to have power factors above 5%. Most of these have been dried out and the power factors reduced to the normal low values experienced in good transformers. The transformers so dried out have in general been returned to service and have given satisfactory operation.

### Failures Prevented

Table I shows that 14 of these transformers with power factors above 5% failed before they were dried out. In view of our present practice of removing transformers from service as soon as they are found faulty by power factor test; there is every reason to believe that a very large percentage of those in the group of 250 would have failed within a few years if the faults had not been corrected. It seems conservative to estimate that at least 100 failures were prevented during the past eight years or so. Placing the cost of a transformer winding failure at $500, this represents a saving of $50,000. Of course, this does not take into consideration the benefits de-

rived from the location and removal of faulty bushings, and neither does it take into account the value of reduced service interruptions or simultaneous damage to other equipment, in case of transformer failure.

### Conclusions

As a result of our experience in testing and maintaining transformers and in the light of the foregoing discussion, the following conclusions can be drawn:

1. The number of failures experienced in transformer windings can be reduced by a field power factor testing program which is conscientiously followed up to correct faults which are indicated.

2. The percentage of failures experienced in transformers with power factors below 5% was in the order of 0.1% per year or less duran eight year period. This is exceedingly low as compared to failures which might be expected in transformers which have winding power factors above 5%.

3. As a result of our practice of correcting faults in transformer winding insulation when indicated by power factor test, it is conservatively estimated that 100 winding failures have been prevented during the past eight years, which possibly represents a saving of some $50,000.

4. Our experience in testing and maintaining some 4000 transformers over a period of eight years or so has not only made it possible to form a relationship between failures in transformer winding insulation and power factor test values, but has also shown how to correct faulty conditions before failures take place, and helped in keeping the equipment in good operating condition at all times by simple maintenance methods.

---

## Operating Details of the Compressed-Air Breaker

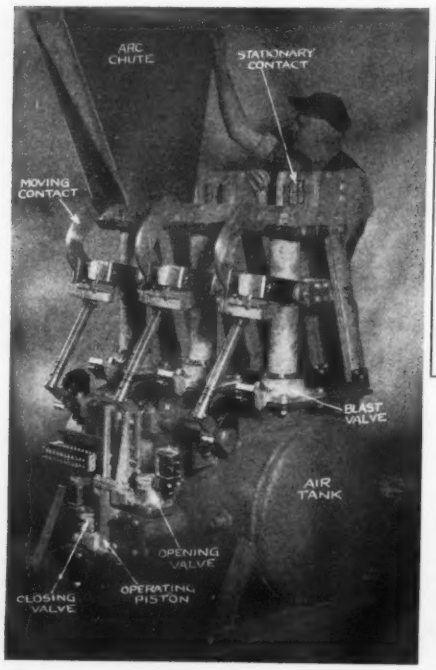
THE interrupting element of the new Westinghouse compressed-air circuit breaker, announced recently, uses a cross blast of compressed air that passes between separated contacts in such a manner that the arc is driven against insulating splitter plates. Just before separation of the contacts the air blast is turned on and the contacts part in such a way as to draw the arc near the edges of the diverging splitter plates. Quickly elongated between the splitter plates by the air blast, the arc is reduced in cross section and driven against the plates. By the time a current zero is reached an intense diffusive effect has deionized the arc space rapidly and causes the arc to be interrupted.

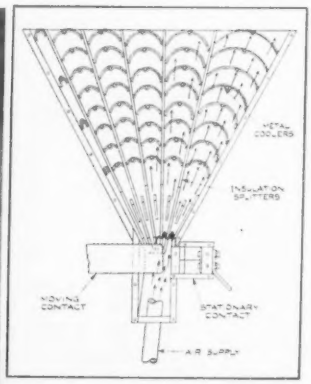
Operation of a breaker of this type by an air mechanism has several important advantages. Essentially the mechanism consists of an air cylinder in which the piston moves vertically. This piston is connected by cranks and levers through insulating pull rods to each of the three movable contacts. A trip-free mechanism is unnecessary, since equivalent results are obtained with proper control of the air operating mechanism itself. For opening the breaker, air is admitted to the upper part of the cylinder by means of an electrically controlled air valve, thus forcing the piston downward.

By this means an opening force of as much as 3000 pounds may be obtained, the corresponding speed of contact motion being from 15 to 20 feet per second, which is equivalent to complete opening in about 1½ cycles. By supplying air for opening from an auxiliary tank of limited volume, the force of air on the piston diminishes gradually as the breaker contacts travel toward the open position, and shock at the end of the stroke is thereby minimized. This auxiliary tank extends into the main tank itself, and consists of a large tube closed at both ends except for a small orifice that allows the auxiliary tank to recharge at a rate that is slow compared with the opening speed of the breaker. Piston speed is still further checked by discharging the air through an orifice, instead of opening the cylinder to atmospheric pressure. The breaker is closed in exactly the same manner as it is opened, except that air is supplied from a secondary auxiliary tank to the space below the piston by a second set of valves.

The breaker cannot be opened unless the air blast is turned on beforehand. Co-ordination between contact motion and blast valve operation is achieved by direct mechanical connection between contacts, air operating mechanism, and the blast valve that controls the interrupting air stream. The three blast valves, which are of the poppet type, are streamlined to reduce resistance to air flow and are mounted at an angle in the base of the vertical tube supplying air to the interrupter.

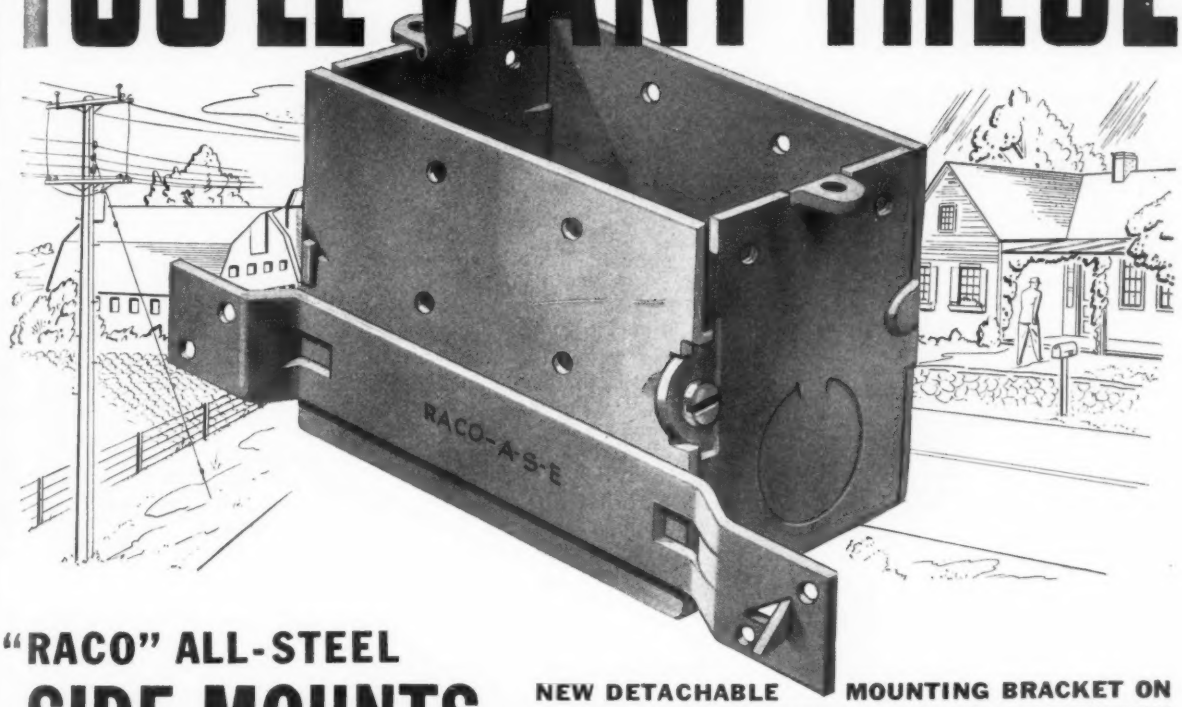
As the air blast is turned on it directs the arc directly into a "throat" formed by side walls of fiber and the slots in the ends of the splitter plates. Under nonarcing conditions those splitter plates nearest the stationary contact receive most of the blast impact, but if the arc current is instantaneously high, generation of gas from the fiber splitters builds up enough



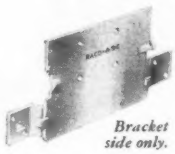

**This view of the new compressed air breaker shows the various component parts. Details of the arc chute are shown above. Big advantages of these new breakers is the great saving in space that is possible.**

# YOU'LL WANT THESE




## "RACO" ALL-STEEL SIDE MOUNTS

**NEW DETACHABLE MOUNTING BRACKET ON SWITCH BOXES FOR WALLBOARD, SHEETROCK AND SIMILAR INSTALLATIONS**



*Bracket side only.*

Why put up with unsightly bulges, in an otherwise smooth wallboard installation, caused by the usual types of bracket boxes,—or

Why incur the additional expense of channeling to recess the usual type of bracket box in order to prevent these bulges?

Here's the way RACO•ALL-STEEL has eliminated another headache for the contractor.

RACO•ALL-STEEL Side Mounts are mounted on the side instead of the face of the 2 x 4. The Side Mount Box may be spaced accurately for the thickness of the kind of board being used. It may be anchored temporarily, for checking, by means of the pointed projection provided. And then, in perfect alignment, fastened securely in its permanent position.

Where this type of installation is the exception, wholesalers may stock the bracket only. Assembly on RACO• ALL-STEEL rectangular boxes is quick and easy.

Experienced engineering keeps RACO•ALL-STEEL PRODUCTS in step with the wiring trends in every section of the country. They provide many advantages for rural and urban modernization work, as well as on new jobs. Write for your copy of the RACO•ALL-STEEL PRODUCTS catalog—there is no obligation.

***Distributed nationally by:***

**ALL-STEEL-EQUIP COMPANY**
**INCORPORATED**
**205 Griffith Avenue, Aurora, Illinois**
***Factories:*** **South Bend, Ind.; Aurora, Ill.**

*RACO • ALL-STEEL BEVELED CORNER SWITCH BOX for all types of non-metallic cables.*

*RACO • ALL-STEEL METALLIC CABLE BOX —3½" or 4" octagon with non-protruding clamp screws. Box may be installed on flat surface.*

*RACO • ALL-STEEL BOX for sidewall bracket—2" vertical adjustment. Bridge is threaded for ½" nipple and equipped with set screw.*

*RACO • ALL-STEEL 4" SQUARE BOX with mounting bracket. Simplifies the installation of switches and receptacles.*

*RACO•ALL-STEEL CABLE BOX—3½" or 4" octagon. Permits side or back entrance of all sizes of non-metallic cables.*

**RACO • ALL-STEEL • PRODUCTS**
Switch Boxes • Outlet Boxes • Cutout Boxes • Cabinets • Conduit Fittings
*Distributors in All Important Centers*

pressure to divert part of the air stream toward the splitters farthest from the fixed contact, and superfluous ionized gases are carried away. This action is enhanced by widening the side walls of the throat rapidly on the contact side of the end of the splitter. The effect of this construction is to divert part of the air stream sidewise when the arc current is high.

The fibre splitter plates are tapered in thickness near the end so they are approximately parallel for some distance. Erosion of the slot in the fibre to a distance of two inches is thus permissible without sensibly altering the interrupting characteristics. Copper "tongues" are introduced parallel to the splitter plates to limit the looping of the arc between these plates to a amount sufficient for interruption. The arc voltage is kept low by this means. These tongues are built into individually removable cooling units which also contain a series of cooling elements to deionize the arc gases before they reach the open end of the arc chute. Cooling units and splitter plates are easily removable from the end of the chute for inspection.

## Mobile Capacitor Emergency Unit

A PORTABLE, trailer-mounted capacitor equipment, which can quickly be moved to any substation on the utility's system in case of an emergency, was recently built at General Electric's Pittsfield (Mass.) works for the Pennsylvania Power and Light Company. Completely assembled at the factory, the equipment has automatic control for varying the kva as demanded by circuit voltage conditions. The mobile unit is believed to be the first of its kind.

The automatically switched equipment is rated 1080 kva, 2300 delta, 4000 Y volts, three-phase, 60 cycles. It consists of three sections of 180, 360, and 540 kva. By proper control, using a contact-making voltmeter as the master element, six capacitance steps are available: 180, 360, 540, 720, 900, and 1080 kva.

The portable block of capacitors is expected to be an important supplement to the large number of capacitor equipments permanently located on the utility's system, which embraces an area of approximately 9300 square miles.

Readily available to any of the system's substations, the mobile units will aid in releasing transformer capacity in case of emergency conditions, such as loss of transformer capacity or rapidly increasing loads which would overload existing transformers. It will enable the utility to maintain voltage at different points in the system, compensating for seasonal shifts of load.

Total weight of the capacitor equipment is more than 14,000 lb. The equipment is mounted on a standard, high-speed 8-wheel type trailer which will connect to a tractor-truck by drawbar.

## Commercial Sales Round out Volume

(*Continued from page* 21)

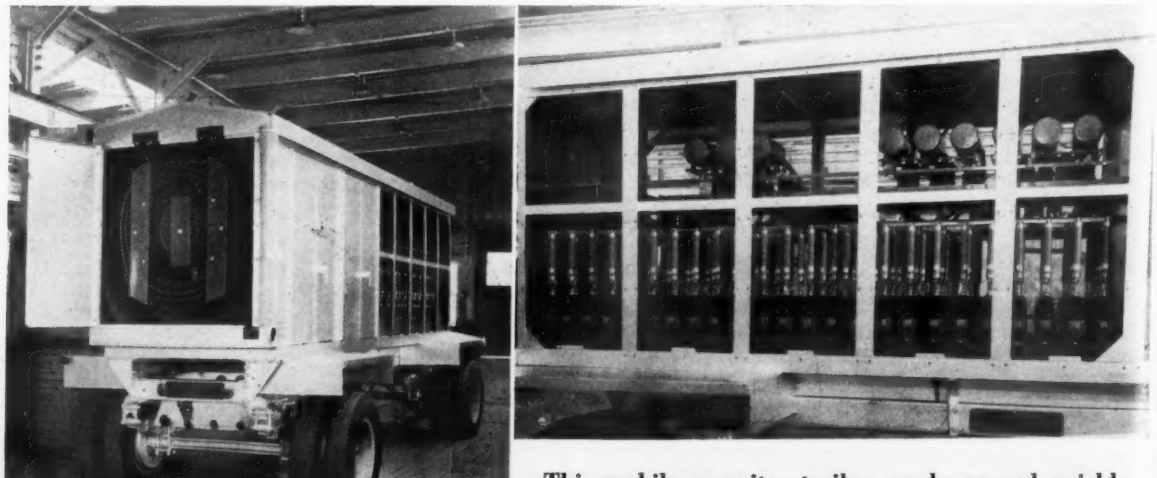
the management installs new electric equipment in its ten best-located apartments, for which it gets top rentals. Appliances already installed are shifted from one group of units to another until the oldest equipment, not discarded, is located in the least expensive units.

Kirby-Tuttle Company, Inc., began business in May, 1937, and has an excellent location in the heart of Miami's downtown shopping district. Mr. Tuttle is president and Mr. Kirby vice president. The third member of the firm, Frank Correa, is secretary-treasurer and acts as office manager.

All three firm members were formerly associated with Domestic Refrigeration Company, Inc., local Frigidaire distributors. For ten years Mr. Kirby and Mr. Tuttle were members of the National BTU Quota Club, Mr. Kirby serving one term as vice president.

Temperamentally unlike, Kirby and Tuttle make excellent teammates. Usually, they work together in closing deals for commercial equipment, when several individuals have an interest in the purchase.

During their connection with Domestic Refrigeration Co., and since they have been in business for themselves, Kirby and Tuttle have managed to sell a considerable percentage of hotel, restaurant and club refrigerating units installed in Miami and vicinity.



**This mobile capacitor trailer can be moved quickly to any substation for emergency use. Automatic control varies kva according to circuit voltage.**

# HOTPOINT MAKES WATER HEATING NEWS

## with the First National Advertising Campaign on Electric Water Heating

## Nearly 25,000,000 Advertising Messages

HOTPOINT is the first Electric Water Heater manufacturer to use national advertising to stimulate sales for YOU. Every month, beginning in April, Hotpoint Water Heater National advertising appears in the two well-known home magazines, AMERICAN HOME and BETTER HOMES AND GARDENS.

People who are thinking of building and remodeling read these two home-building magazines. That is why they were selected to carry the advertising of Hotpoint Electric Water Heaters.

There was a large increase in the number of homes built in 1939. There will be a larger increase in 1940.

AMERICAN HOME and BETTER HOMES AND GARDENS reach these prospects with a total of nearly 25,000,000 Hotpoint Water Heater advertising messages. Buyers in your community will see these messages, so get ready NOW for YOUR share of Hotpoint Water Heater sales. See your distributor or write for information today!

## New "SAFE-T-SEAL" Bond for Calrod Water Heating Units

**"SAFE-T-SEAL" Bond, a new non-conducting material for sealing Calrod Units, greatly increases the life of the unit, and reduces possibility of interruptions in the water heater service.**

### More Hotpoint features that make sales for you

CALROD, Hotpoint's airtight heating unit, is immersed directly in the water inside the tank. All heat generated is delivered to the water. No waste. No flame. No fire hazard.

THERMOSNAP, Hotpoint's automatic temperature control, makes Hotpoint Water Heaters safely automatic.

DESIGNED by industry leaders and world's largest manufacturer of electric water heaters.

Hotpoint has pioneered more exclusive features than any other manufacturer in the field.

## Water heating activity greater now than ever before in history!

**More building activity**—Boom-time home building means more sales for you. New homes need water heater service. Hotpoint national advertising in home magazines helps you sell.

**More people recognize advantages**—The old saying, "A satisfied customer is your best salesman" means something to Hotpoint retailers. There are more owners—more satisfied customers—of Hotpoint Water Heaters than any other make.

**Dealers benefit** by the activity of utilities who want to increase water heater sales. Dealers sell more water heaters—make more profit from strong Modern Kitchen Bureau program.

**EDISON GENERAL ELECTRIC APPLIANCE CO., Inc.**
**5614 West Taylor Street, Chicago, Illinois**

### Enter the MKB Window Display Contest

**Hotpoint will pay duplicate prizes to all National winners who use exclusive Hotpoint window displays in the MKB Contest. Make more than one entry. Improve your chances to win.**

# Hotpoint

## AUTOMATIC ELECTRIC WATER HEATERS

ELECTRIC RANGES • REFRIGERATORS • WASHERS AND IRONERS • CLOTHES DRYERS • DISHWASHERS • ELECTRASINK

# NEWS of the INDUSTRY

## Westinghouse Contest Prizes Total $23,000

A series of "Advise-a-Bride" contests in which $23,000 worth of electrical appliances are being given away as prizes, is being conducted by the Westinghouse Electric and Manufacturing Company.

Each week, for five weeks starting April 18, ten Westinghouse Aristocrat refrigerators and ten Westinghouse Commander ranges will be awarded to writers of prize-winning letters. As second prizes, 50 Westinghouse Streamline irons will be awarded weekly. The letters will be written on one of these subjects:

"Dear Westinghouse Bride, you should have a Westinghouse refrigerator because . . ."

"Dear Westinghouse Bride, you should have a Westinghouse range because . . ."

The contestant is to finish the letters in 25 to 100 words on entry blanks available at all Westinghouse range and refrigerator dealers. Each contestant is to include the name of the dealer from whom the blank was obtained.

Details of the contests are being announced to Westinghouse dealers throughout the country at a series of 60 dealers' conventions in principal cities. A stage presentation, "Ring-Time," is being given at each of the conventions to dramatize the introduction of the contests.

The "Advise-a-Bride" contests have been made the theme of the Westinghouse spring promotional activity, and the "Ring-Time" shows represent the most elaborate effort of its kind to be undertaken by the company. Four complete stage troupes are touring the country to present the shows. First of the shows was staged in Knoxville, Tenn., on March 8.

The "Advise-a-Bride" contest will be supported by an extensive program of newspaper and magazine advertising, Westinghouse officials said. Names of winners of the refrigerators and ranges will be announced on the Westinghouse Thursday evening radio program, "Musical Americana," and winners of the 50 irons weekly will be notified by letter.

## Hotpoint Campaign For Distributors

One of the greatest distributor sales campaigns ever sponsored by the Hotpoint organization was launched March 25, to continue for ten weeks. Special promotional packages, including store traffic builders, consumer literature, posters, and window displays, have been made available by each Hotpoint Appliance Division, to assist distributors and retailers in making the ten weeks' Sweepstakes activity the greatest sales stimulator in Hotpoint appliance history.

The Hotpoint Sweepstakes Campaign covers all five lines of Hotpoint home appliances. Approximately five million dollars in distributor sales is the goal, according to Hotpoint's general merchandising manager, G. H. Smith.

Clinton Brown, Hotpoint campaign manager, will administer the Sweepstakes activity, issuing the weekly "Tip Sheet" bulletin covering standings of all Hotpoint districts, distributors, and distributor salesmen. Each Hotpoint home appliance division, including electric ranges, water heaters, refrigerators, home laundry, and kitchen sanitation equipment, has provided a special retail activity for the duration of the Sweepstakes Campaign.

Distributor salesmen will receive prize points based on sales of all Hotpoint home appliances. In addition to prizes for balanced performance, prize points will be awarded by the individual Hotpoint appliance divisions for separate sales achievement on Hotpoint electric ranges, water heaters, refrigerators, home laundry, and kitchen sanitation equipment. Prize points are redeemable in merchandise prizes. "Derby tickets" will be awarded to distributor salesmen for each unit sold throughout the campaign, making them eligible for the "Grand Derby Prize" to be presented when the campaign is completed.

**This Hotpoint electric water heater demonstration kit has solved the perplexing problem of how to demonstrate water heaters. It consists of a 2-gallon Hotpoint Boguette water heater, pipe and funnel assembly, display stand, placards, folders, and bouillon cubes or concentrated coffee. The action demonstration, combined with the appeal of free refreshment, is a surefire traffic stopper.**

# NORGE *Fastemp*

## HOME HEATER *for* 1941

*gives your salesmen* THE MOST SPECTACULAR SALES STORY in the SPACE HEATER FIELD

**A TOP-NOTCH SEASONAL PROFIT-BUILDER FOR APPLIANCE STORES** is the Norge Fastemp Home Heater line because it brings in traffic and sales when some other appliances are tapering off. A leader in exclusive and dramatic sales features, the Norge Fastemp Heater sales story is spectacular and convincing. Any man or woman can SHOW as well as TELL why this entirely different heater is better and will deliver more heat for less money—will save money because its *all-porcelain* heat distributor will outlast steel, copper alloys, aluminum—is easiest to use because its Single-Dial control gives always-perfect adjustments. Space heaters are a gold mine for many appliance stores. Well over a quarter million will be sold this coming season. Get in on this market with the brilliantly successful Norge Fastemp Home Heater—a proved winner, now soaring to still greater popularity. Send for literature and details about salesroom material that helps everybody sell. Send the coupon.

## FEATURES THAT SELL

1. **BEAUTIFUL FURNITURE-STEEL CABINET,** washable wrinkle finish
2. **EXCLUSIVE "L"-SHAPED** heat distributor with 40% more heating surface
3. **PORCELAIN FINISH INSIDE AND OUT** heat distributor; fire-proof, moisture-proof, rust-proof
4. **EXCLUSIVE TRIPLE-ACTION SYNCHRO-CONTROL** single-dial adjustment sets air, oil, damper in one motion
5. **EXCLUSIVE DOWN-DRAFT WHIRLATOR** feeds extra air into heart of flame for perfect combustion
6. **LUMINOUS YELLOW FLAME** rich in radiant heat rays
7. **AUTOMATIC CHIMNEY-DRAFT REGULATOR** "balances" draft regardless of weather
8. **ACCESS DOORS** on each end can be opened to emit a flood of valuable radiant heat.
9. **VISIBLE OIL GAUGE** on fuel tank shows amount of oil in tank, helps to prevent forgetting to refill.
10. **SURE-FLO OIL TANK** with big fill opening and strainer. Tank cap on chain to prevent losing
11. **LOW FLUE CONNECTION** for installation through fireplace opening
12. **CONSTANT-LEVEL OIL METER** maintains uniform fuel flow and heat output
13. **EASY-FILL PORCELAIN HUMIDIFIER,** non-rusting finish for long life and easy cleaning
14. **ELECTRIC BLOWER** (optional) with 300 C.F.M. output sends heat over floor and, if desired, to remote rooms through standard 4" ducts
15. **A GOOD NAME.** The name NORGE is one of the best known and most respected in the home appliance field

**NORGE DIVISION BORG-WARNER CORPORATION**
DETROIT, MICHIGAN

Date_____

Norge Division Borg-Warner Corporation
670 E. Woodbridge St., Detroit, Michigan

Rush me details of your Fastemp Heater proposition.

Name_____

Firm_____

Address_____

City_____ State_____

ES-114

**NORGE**

## Novel Spring Selling Plan Announced by Easy Washer

At a series of nation-wide dealer meetings held during the past 10 days Easy Washing Machine Corporation announced a packaged spring selling plan designed to step up the sales of higher-priced, better-value Easy washers.

In announcing the plans, James J. Nance, Easy general sales manager said "Our dealers, like other dealers in this industry, have been demanding promotion plans that are not based on price appeal alone. We have all been talking about selling features and values in higher priced home laundry equipment. Now for the first time in this industry the dealer is being given a complete promotional package to sell Spindrier washers. We believe it is the most comprehensive sales plan ever presented to the appliance dealer."

The plan is based on the savings that can be effected by Easy's unusual ability to wash "extras" such as blankets, slip covers, curtains, rag-rugs, etc., that are not usually washed at home. Most of these items can be washed and damp-dried efficiently in an Easy Spiralator-Spindrier washer but not in the average low-cost washer.

A nation-wide survey of typical American homes shows that by washing these extra items at home an average housewife can effect substantial savings not only during spring cleaning but throughout the year.

The selling strategy is built around a program of spring cleaning economy demonstrations in which the dealer salesman shows by actual test how "extra" items can be washed at home. Part of the promotion package is a check-chart which is used by the salesman as a sales-closer. It enables the housewife to figure her own savings in a few minutes.

To put the plan in immediate operation each Easy dealer is being supplied with a complete demonstration kit that includes demonstration manuals, advertising materials, tests for color fastness, blanket timers, display services.

## Square D Co. to Occupy New Building

Contracts for the design and construction of a new plant and office building 238 feet by 430 feet for the Square D Company in Milwaukee, have been awarded to The Austin Company, engineers and builders.

According to F. W. Magin, president of the company which manufactures electric switches and controls, the development will include air conditioned offices and modern manufacturing facilities conducive to efficient straight-line production. The offices will be 50 feet by 238 feet, with one story and basement.

The building will be located on North Richards Street. It will be of monitor construction with welded steel trusses and will have two 60 foot aisles and three 40 foot aisles. Toilet and locker facilities will be accommodated on special mezzanines in the monitors and there will be a basement under the entire office section.

**More than 300,000 persons this year will see appliance demonstrations staged from the new Frigidaire trailer, shown here, which is now a unit of the REA farm equipment tour. The trailer, said to be the first one of its type, was designed and constructed especially for Frigidaire Division, General Motors Sales Corporation. A route extending 10,000 miles, through several southern states and portions of the east and middle west, will be covered by the trailer in its 1940 REA tour. Among the appliances to be demonstrated are Frigidaire electric refrigerators, including the Frigidaire "Farm 8"; electric ranges, one of which is a combination model for electric cooking and heating with coal or wood; and electric water heater. Frigidaire commercial equipment adapted to farm operations is shown with illuminated photographic transparencies.**

## Trumbull Distributors Attend Sales School

On March 28 and 29, the Trumbull Electric Manufacturing Company held a sales meeting in the form of a sales school at the Plainville plant, which was attended by all the Trumbull salesmen and a large delegation from the Trumbull distributors in the eastern and southeastern sections of the country.

A simillar meeting was held at the Ludlow, Kentucky factory April 11 and 12, which was attended by the Trumbull salesmen and representatives from Trumbull distributors in the mid-west and southwest sections of the country.

At these meetings discussions were held on Trumbull products and developments, and after each morning and afternoon session, examinations followed in which all in attendance participated.

The so-called freshman examination was held after the first morning session the sophomore examination the first afternoon the junior examination the second morning; and the senior examination the second afternoon. At the close of the session, certificates of graduation were presented.

The value of having sectional sales meetings, with representatives from distributors attending, was demonstrated by the interest and enthusiasm of all participating.

## New Pole Line Hardware Manufacturer Enters Field

Announcement of the beginning of operations by the Electrical Manufacturing Co., at Battle Creek, Michigan, was made on February first by George C. Price, president of the new company, which is offering a complete line of pole line hardware and primary fuse cut-outs. For the past six years, Mr. Price has been sales manager of Porcelain Products, Inc., Parkersburg, W. Va., and the pole line hardware made by the Electrical Manufacturing Co. is being distributed through Porcelain Products' sales organization.

Fred R. Krueger, formerly factory manager of the Utilities Serv-

# ...e's the "CATCH" of the Season!

...inty Westinghouse Bride! She is catching the public fancy clear across the ...untry—attracting throngs of interested prospects, shoppers, buyers into more ...an 5,...00 Westinghouse dealer stores.

...Big ...ores, furniture stores, public utility departments, hardware and electrical ...res ...re featuring the Westinghouse "Advise-a-Bride" Contests—and every-...ere ...e story is the same, "Things are humming!"

Every Westinghouse retail promotional activity is aimed at *ACTION* in retail electrical stores because this action brings not only appliance sales but helps all the goods the stores are selling.

Your Westinghouse man knows what is going on—and it will pay you to ask him about the forthcoming Westinghouse retail promotions.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
MERCHANDISING DIVISION, DEPT. 155, MANSFIELD, OHIO

Tune in on "Musical Americana"—every Thursday evening
NBC Blue Network—coast-to-coast

...OTES"
FROM A
W
ALESMAN'S
NOTES

2
Everywhere I go the Bride Displays are in front windows – Getting lots of attention – Bringing in the shoppers
She certainly pulls 'em in!
Help me with your advice!
FREE!

3
-tuned in "Musical Americana" last night – swell program and a good play for the Bride contest – Everybody is hearing about it.
SO JUST GO TO YOUR NEAREST WESTINGHOUSE APPLIANCE RETAILER AND GET YOUR FREE OFFICIAL ENTRY BLANK—LOOK FOR THE BRIDE WINDOW DISPLAY

4
– big stores, little stores – all outlets are sizzling with activity! – and our new dealers are delighted
Boy! they're getting ACTION - plenty!

# Westinghouse "The Line of Least Resistance"

ice Co. and the Line Material Company, is in charge of manufacturing for the new company. Equipment has already been installed and is in operation at Battle Creek. To assure prompt delivery of standard items, the nationwide warehouse facilities of Porcelain Products, Inc. will be expanded to include stocks of pole line hardware at points where such service is desired by distributors or users.

Catalog information is available by writing the Electrical Manufacturing Company, Battle Creek, Michigan, Porcelain Products, Inc., Parkersburg, W. Va., or any of their district offices.

## Old Electric Range Modernizing Activity

For some time the General Electric Company, through its distributing channels, has made available a plan to modernize old electric ranges in the homes of its customers by substituting the newest type of Calrod surface cooking units. J. R. Poteat, manager G-E range and water heater section, has just announced the introduction of a campaign to modernize old model ranges now in customers homes with 1940 G-E clean speed Calrod units.

Calrod units for surface cooking, which have been made increasingly more efficient since their inception, are characterized in the 1940 ranges by marked increases in speed, longer life, lighter weight, greater flexibility, and greater convenience in use. The five-speed units were made standard equipment for all surface cooking purposes in the new ranges. Improved appearance resulted from chrome-plated stainless steel unit rings which overlap the cooking top, from greater flattening of the Calrod unit coils, and from a one-piece cupped pan under each unit.

Terminals and leads were removed from the spillage zone, and since the unit ring is hinged to the cooking top, the drip pan may be removed and cleaned like any cooking utensil. With 33 per cent more flattened surface of the cooking coils and newly designed rigid supports to keep the coils in place, more utensil contact is obtained. The new design of the drop pan returns greater heat to the utensil than formerly, and these two factors in combination produce increased speed for cooking. The weights of the coils were also decreased by from 17 to 33 per cent, resulting in less unit mass to heat.

Lower prices of the new Calrod "Clean Speed" units has been an important factor in the success of the modernization campaign. Utility companies have been particularly interested in the activity because of the additional service thus available to their range customers and the opportunity to decrease future service expense.

## Optimistic Reports On Air Conditioning

An intensive national merchandising campaign to market the Philco-York Portable air conditioning line as the summer weather approaches will be launched next week to round out the "Philco All Year 'Round" program for 1939-1940.

Announcement of the campaign, which was described as the most ambitious ever attempted in the "packaged" air conditioning field, was made by Harry Boyd Brown, who is in charge of all Philco's air conditioning activities.

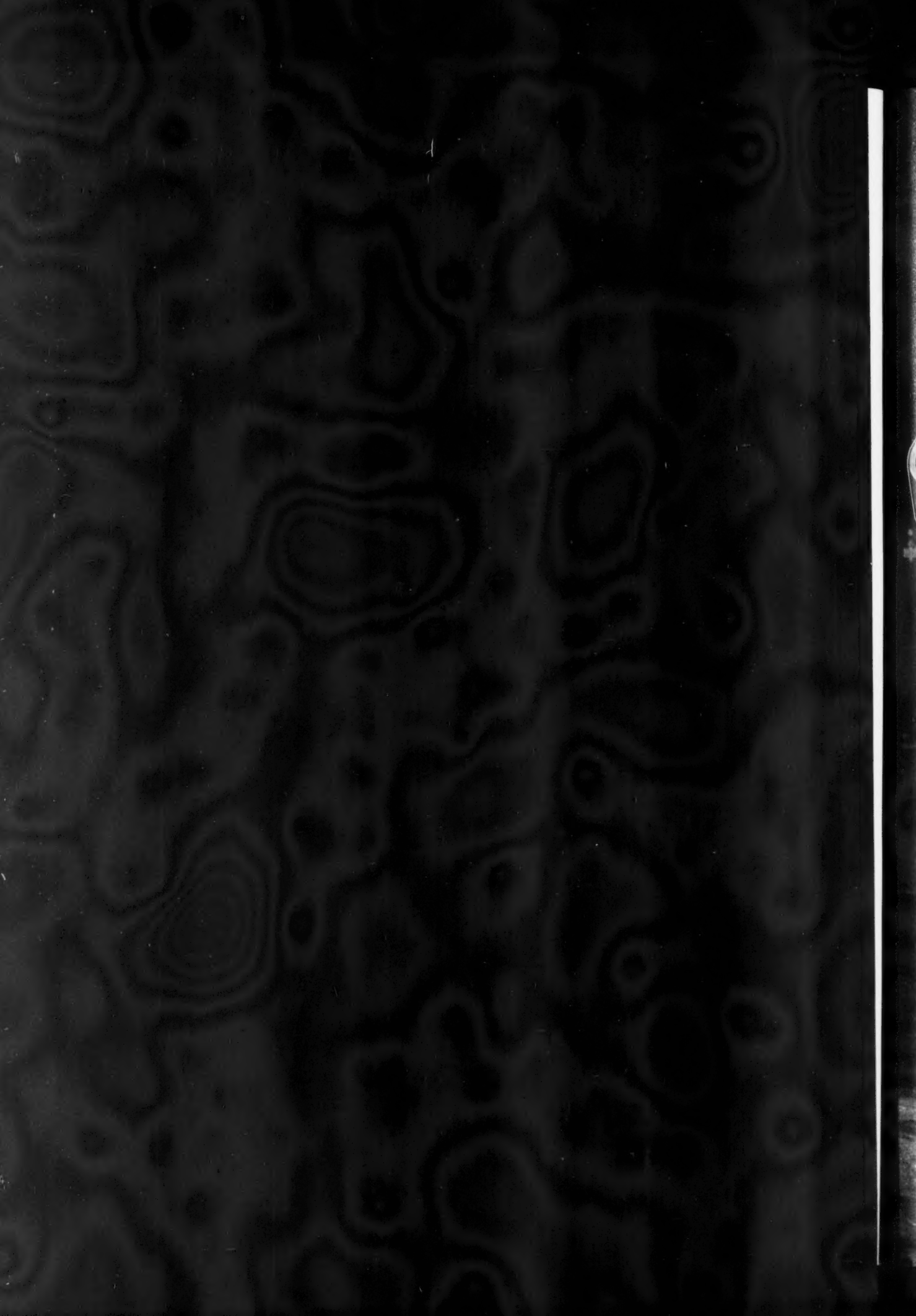
"The air conditioning market, particularly for portable units, is ready and waiting today," said Mr. Brown. "Philco has devised a merchandising campaign among distributors, dealers and consumers to take full advantage of this waiting market which is destined to make possible sales of many millions of dollars worth of air conditioning equipment within the next few years."

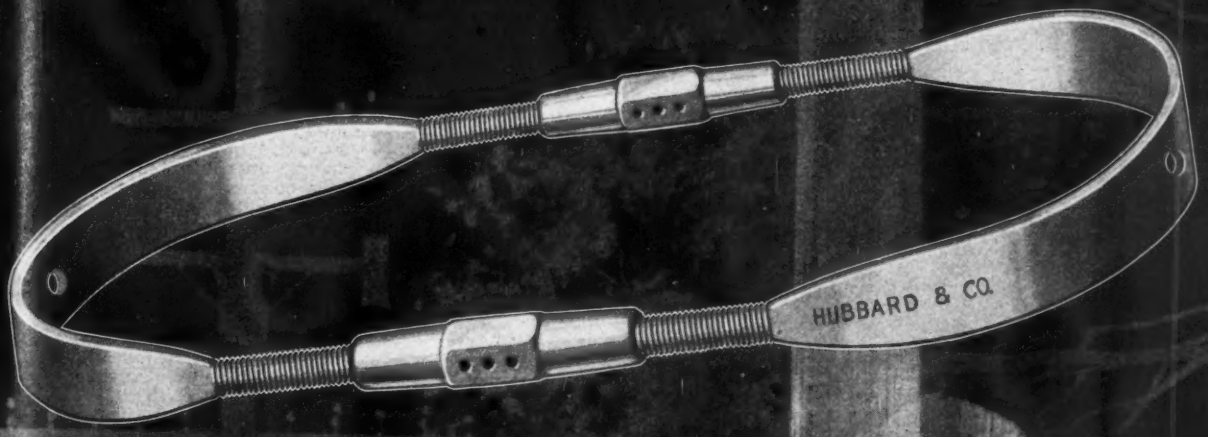
* * *

Six hundred men have been added to the factory force of the York Ice Machinery Corporation during the past six months to handle the increasing air conditioning and refrigeration equipment orders secured, according to the president, Stewart E. Lauer. "In the woodworking department alone," Mr. Lauer states, "we have increased the personnel 50% to keep up with current orders for our newly developed Roller-Seal cold storage door."

A portion of this swell in factory employment at York is the result of a number of recent successes scored by its selling organization. This involves a large absorption refrigeration system for special processing for Tennessee Eastman Corporation in their plant at Kingsport, Tennessee; and other contracts.

**A plentiful supply of fish pictures can always be expected just following the annual meeting of the Florida Contractors' Association, and this year has been no exception. The beauty at the left was landed by W. F. (Spot) Watkins, of Bussmann Mfg. Co. In the picture, from the left, are Mr. Watkins, F. J. McGinnis, secretary of the Association; Paul Leary, sales manager, and Jimmy Clarke, southeastern representative, both of Wadsworth Electric Mfg. Co. (Below) When W. P. McWhorter, of McDonald Electric Co., Miami, and I. H. Owen, southeasern representative of Steel & Tubes, Inc., saw Spot's fish, they scouted around for a couple of their own and submitted this charming pose. (Editor's Note: Could that background by any chance be fishy too?)**






# YOU CAN'T "BEAT THE HUBBARD BAND"

## when there's stubbing to be done

Furnished in all sizes for any diameter stubs and poles. Write Hubbard and Company, Pittsburgh, Pa. for complete data.

**HUBBARD AND COMPANY**

PITTSBURGH . . . OAKLAND CALIFORNIA . . . CHICAGO

RUBBER COVERED POWER CABLES • BULDIING WIRE • BARE WIRE • MAGNET WIRE • SERVICE ENTRANCE CABLE • METALLIC SHEATHED CABLE • CRESFLEX NON-

VARNISHED CAMBRIC • FLEXIBLE CORDS • LEAD-ENCASED AND PARKWAY CABLES • ARMORED CABLE

Get Your Quota

in the Profitable Rewiring Market With

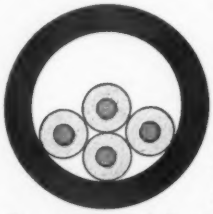
CRESCENT

Small Diameter Building Wire

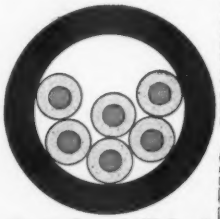
As you well know, the changes in the new National Electrical Code opens up great profit opportunities for you in the rewiring of existing "bottle-neck" branch circuits with attendant increases in feeders—to say nothing of sales in fixtures and appliances.

For such rewiring, it will pay you to use CRESCENT ENDURITE Rubber Insulated Type RHT and CRESCENT SYNTHOL Synthetic Insulated Type SN SMALL DIAMETER BUILDING WIRES which are unexcelled in quality, ease of installation and permanence.

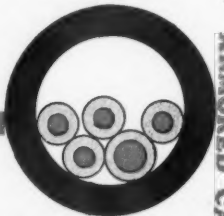
Two typical examples of the increase in capacity possible in existing ½" conduit are shown in the lower two figures at the right.



Four #14 Type R Code Wires permit 3450 Watts



Six #12 Type RHT Small Diameter Wires permit 7450 Watts



Four #12 and One #10 insulated neutral Type RHT permit 8100 Watts

CRESCENT INSULATED WIRE & CABLE CO. INC

TRENTON, NEW JERSEY

SOUTHERN REPRESENTATIVES

ATLANTA, GA.
Edgar E. Dawes
A-4 Rhodes Bldg. Annex

NEW ORLEANS, LA.
Paul Hogan, Jr.
823 Perdido St.

CRESCENT ENDURITE SUPER-AGING INSULATION

## Manufacturers Announce Personnel Changes

The appointment of **L. Martin Krautter** as advertising and sales promotion manager of the Crosley Corporation, was announced recently by **Thomas W. Berger,** general sales manager.

Mr. Krautter comes direct from the Cramer-Krasselt Company, advertising agency of Milwaukee, where for four years he was copy chief. He had charge of all the creative work for some of the best known manufacturers of household appliances in the country.

Before entering the advertising agency business ten years ago, Mr. Krautter had been engaged in the retail sales of household appliances. He has contributed articles on advertising and merchandising to trade, sales and advertising publications.

* * *

**Don J. Murray** has been appointed sales manager for General Electric conduit products, with headquarters at Bridgeport, Conn., according to an announcement made by the company's construction materials division. He was formerly district representative for wiring materials at Los Angeles, where he has been for the past three years.

Mr. Murray joined General Electric at Schenectady in 1928, transferring to Bridgeport a year later. Field assignments which followed included posts as wiring materials representative at Richmond, Va., Baltimore, Md., and Boston. A native of Pueblo, Colo., he spent two years with the U. S. railway mail service and six years in general construction and structural iron work with the American Smelting and Refining Co., the Colorado Fuel and Iron Co., and the Denver and Rio Grande Western Railway.

* * *

Marking a broad expansion in the home office merchandising set-up for Norge kitchen ranges, **J. A. Sterling,** general merchandise manager, Norge Division Borg-Warner Corporation, announces three major appointments, effective immediately.

**E. J. Kanker** is appointed sales manager for all gas and electric ranges. **S. J. McCarthy** becomes assistant sales manager in charge of electric range sales. **S. M. Adams,**

(*Continued on page* 58)

**E. J. Kanker**

## National Power Sales Conference in Roanoke

A National Power Sales Conference, sponsored jointly by the Edison Electric Institute and the Southeastern Electric Exchange, was held Thursday and Friday, April 25 and 26, at Roanoke, Va., with headquarters at Hotel Roanoke. Business sessions of the conference were closed to all except representatives of light and power companies.

The program, prepared jointly by the Industrial Power and Heating Committees of the E.E.I. and the Southeastern Electric Exchange, was planned to give the man on the firing line, the industrial power salesmen, practical information that will help him to sell more industrial power.

The full two-day program included five sessions. One entire afternoon was given to industrial lighting and infra-red heating; another session was turned over to the problems of meeting competition; and the afternoon of the second day was devoted to industrial customer relations, oil refineries, and a symposium on the successful selling of small power applications.

E. M. Clapp, chairman, Industrial Power Committee, of the Exchange, welcomed the delegates to the conference which was then opened by H. E. Dexter, chairman, sales committee, Edison Electric Institute. Heard also on the first morning session were H. M. Sawyer, American Gas & Electric Service Corporation, who spoke on the "Executive Outlook," and Harris S. Bigelow, Sales Analysis Institute, who talked on "The Job of the Power Salesman Is to Sell."

Southern power engineers were well represented on the program which included an address on "Selling Industrial Lighting," by Roy A. Palmer, Duke Power Company; "Selling Infra-Red Heating in Richmond," by C. L. Lane, Virginia Electric & Power Company; "Meeting Competition in Refrigeration and Air Conditioning Field," by H. Chester Gause, Alabama Power Company; "One Method Used to Meet the Diesel Threat," by W. G. Moore, Texas Power & Light Company; "Steam Competition," by P. D. Lawrence, Virginia Electric & Power Company; "Improve Your Industrial Sales Methods to Increase the Net Income of Your Company," by W. A. Moore, Mississippi Power and Light Company; and "Selling Electric Service to Refineries," by W. H. Stueve, Oklahoma Gas & Electric Co.

C. A. Collier, vice president in charge of sales, Georgia Power Company, was the principal speaker at the dinner session held Thursday evening. Toastmaster at the dinner was C. E. Greenwood, commercial director, E.E.I.

## Lighting Symposiums Feature I.E.S. Meeting

The spring meeting of the Southwestern Section, Illuminating Engineering Society, held in Dallas, Texas, April 19 and 20, was featured by a lighting sales conference, in which the electrical men "got down to cases" and talked about lighting sales activities.

There were talks, discussion and a "skit" at this conference, held Saturday morning, all designed to present the practical side of selling more and better lighting. C. A. Tatum, general sales manager of Dallas Power & Light Co., was program chairman, and subjects and speakers included the following:

"A Common Front on Lighting Sales"—Clarence B. Barron, illuminating engineer, Gulf States Utility Company, Beaumont, Tex.; "Commercial Lighting Sales Skit"—E. S. Robison, Westinghouse Electric Supply Co., Dallas, and A. P. Hammerstrom, General Electric Supply Co., Dallas; "The Value of Certification Plans for Lighting Equipment" included discussion of RLM Standards Institute, Flour-O-Lier manufacturer, American Lighting Equipment Association, and certified I.E.S. lamp manufacturers; and "Contractor Cooperation in Lighting Sales" was discussed by Harry Hrivnatz,

**Birthday Party for Georgia Chapter, Illuminating Engineering Society**

**Celebrating the first anniversary of the receipt of their charter, the Georgia Chapter, I. E. S., met in the Henry Grady Hotel, Atlanta, April 15, to hear a message from the I. E. S. national president, Lester H. Graves. Seated at the speakers' table, in addition to Mr. Graves, were C. H. Burch, chapter chairman, J. F. Whitehead, secretary, both of Atlanta, and R. W. Staud, I. E. S. director and a member of the finance committee, of Des Plaines, Ill. Much of the discussion at the meeting centered about the Chapter's invitation to the Society to hold its 1941 annual convention in Atlanta. Mr. Graves said that the possibility of the convention being held in the South was especially good and that it was understood that invitations would be extended by Dallas and New Orleans, also.**

Houston Lighting & Power Co., Houston, Texas.

Lester H. Graves, of Curtis Lighting, Inc., president of the Illuminating Engineering Society, was an honored guest at the Southwestern Section meeting. He addressed the luncheon on Friday, and at the reception and dinner dance Friday evening, was presented with a ten-gallon Texas cowboy hat. This dinner dance was something new for the Southwestern Section, which went "social" for the first time at its spring meeting.

A new program arrangement was followed at the Friday meeting, with four sessions, each devoted to a single phase of illumination and presided over by a "session chairman." No long papers were presented, it being rather a symposium of lighting ideas on these various subjects representing all parts of the Southwest.

The topics for the four sessions were "General," with Guy G. Griffin, chairman of the Southwestern Section, as its chairman; "Architectural Lighting," chairman, W. E. Folsom, Dallas Power & Light Co.; "Fluorescent," chairman, Floyd A. Covington, San Antonio; and "Lighting for Photography," chairman, A. P. Hammerstrom, Dallas.

Speakers at the General Session included L. T. Anderson, Texas Electric Service Co., Fort Worth, and Richard Bullwinkle, Dallas Power & Light Co., Dallas, who discussed "Outstanding Installations in Fort Worth and Dallas Area"; Charles Dawson, School of Engineering, Southern Methodist University, Dallas, "Report on Experiments in Office and Classroom Lighting"; and V. J. Graham, General Electric Lamp Division, Dallas, "Radiant Energy Drying."

There were three speakers at the architectural lighting session: Harry Logan, Holophane Company, New York, "Direct vs. Indirect Lighting Systems"; H. B. Sudekum, Dallas Power & Light Co., Dallas, "New Materials and Methods"; and W. E. Folsom, "Lighting from Coffers."

The fluorescent session included the following: "Economics of Fluorescent Lighting," Floyd A. Covington; "Applications of Fluorescent Lighting," Dan M. Galvin, Westinghouse Lamp Company, Dallas; "Fluorescent Luminaires," V. J. Graham; "Fluorescent Lighting in the Home," Miss Ethelle Hudson, Dallas Power & Light Co.; and there were reports on fluorescent installations in the Southwest.

The following subjects were discussed at the lighting for photography session: "Photographic Light Sources," C. D. Havens, Westinghouse Electric Supply Co., Dallas; "Lighting for Color Photography," Henry Garcia, E. G. Marlow Co., Dallas; and a discussion of high speed film and photoflash lamps.

## Dallas Dealers Gird For Ventilating Sales

With 174 persons attending, formal "kick-off" of the 1940 attic ventilation sales season in Dallas, Texas, was held at a breakfast meeting April 9, at the Baker Hotel. The Dallas Power & Light Company was host, and the session was attended by dealers, sales people and others interested in sales of attic ventilation equipment.

C. A. Tatum, Jr., sales manager of Dallas Power & Light Company, delivered the address of welcome and also introduced W. H. Badgett of Texas A. & M. College, whose work in testing attic fans has been an important factor in the development of the attic ventilation industry in Texas.

Ray Dixon, head of the dealer sales section of Dallas Power and Light, advised the dealers to prepare for "splendid business" which, he said, every indication points to this year. Mr. Dixon predicted that between 1200 and 1500 attic fans will be sold in Dallas during the next eight months. During March, this year, 84 attic fans were installed in Dallas, he said.

Advertising which the Dallas Power & Light Company is using in a campaign to help dealers sell attic fans was presented by Stanley W. Foran, advertising agency head.

Rapid growth of the popularity of attic ventilation in Dallas is reflected in sales during the last five years. In 1935, 58 attic fans were sold in Dallas. In 1936, sales jumped to 131; in 1937; to 317; in 1938, to 641; and in 1939, to 898; making a grand total of 2,045 attic fans were sold in this city in the past five years.

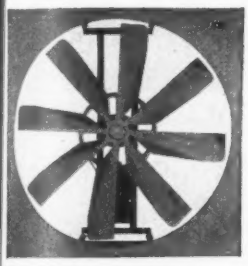
## Charlotte Contractor Heads A. W. Bureau

R. H. Bouligny, of the R. H. Bouligny Corporation, electrical contracting frim, has recently been named chairman of the Charlotte Adequate Wiring Bureau.

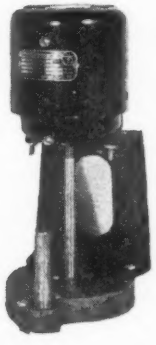
Other officers are: vice president, John Smith, district manager, Westinghouse Electric Supply Corporation; treasurer, John Bolen, a member of the electrical

**Dallas dealers attend "kick-off" breakfast beginning intensive ventilating sales campaign.**

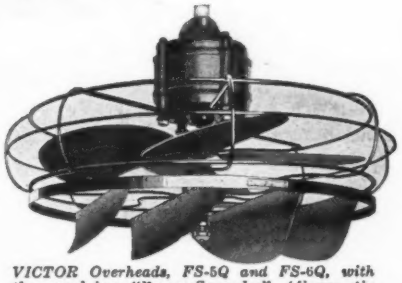
# AIR CIRCULATING AND COOLING EQUIPMENT



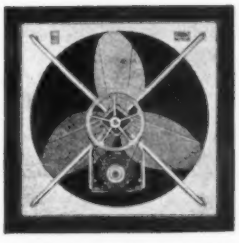
*COOLAIR'S improved home-cooling fan for 1940—all moving parts "float" in larger, sound-absorbing springs. Ultra-quiet, easy to install, lightweight steel frame and blades, long hour service motors. 12 sizes for homes, 16 for commercial jobs. American Coolair Corporation.*



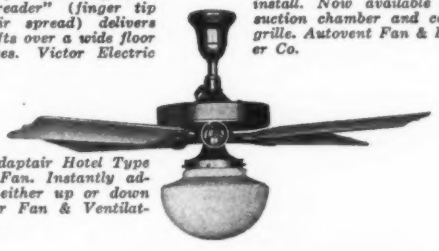
*K & H Evaporative Cooler Pumps. Built for long service. Fully enclosed motor water-proof. Needs oiling only once a year. K & H Mfg. Co.*



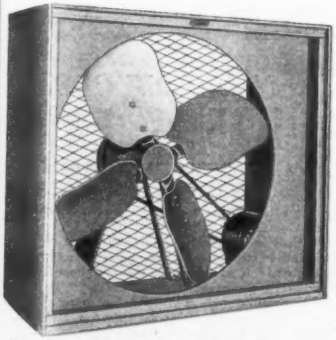
*VICTOR Overheads, FS-5Q and FS-6Q, with the revolving "Breeze-Spreader" (finger tip control for degree of air spread) delivers breezes evenly without drafts over a wide floor area. 12 and 16 inch sizes. Victor Electric Products, Inc.*



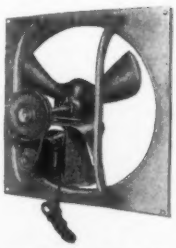
*COOLVENT Improved 1940 Comfort Cooling Fans handle more air at slower speeds. Quieter operation. Easier to install. Now available with suction chamber and ceiling grille. Autovent Fan & Blower Co.*



*HUNTER Adaptair Hotel Type 52" Ceiling Fan. Instantly adjustable for either up or down draft. Hunter Fan & Ventilating Co., Inc.*

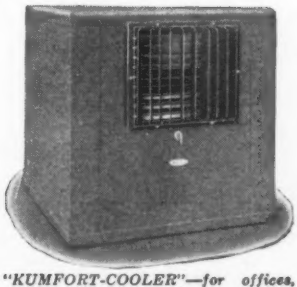


*STAKOOL Attic, Window and Floor Fans are sturdily built for quiet, efficient operation. Attic fans furnished with or without tunnels and grills, 4500 to 16000 C.F.M. Five year guarantee E.H.F.A. approved. Manker Products Co., Inc.*



*BUFFALO Breez-Air Attic Fans are made in a complete range of sizes, capacities from 4,000 to 17,000 c.f.m. This line features quiet operation, requires no springs or other special mountings. Buffalo Forge Company.*

*SIGNAL'S Deluxe streamliner. Desk Type Fans available in a range of sizes from 8" to 16" in both AC Induction and Universal models. Signal Electric Mfg. Co.*



*"KUMFORT-COOLER"—for offices, retail establishments, beauty parlors, etc. Cools 8 to 12 degrees below outdoors. Furnishes fresh, washed and filtered air, free of dust, dirt and odors. Portable model 1200 cubic feet per minute capacity. Stationary models from 2800 cu. ft. to 22,000 cu. ft. per minute. Hall Mfg. Co., Cedar Rapids, Iowa.*

# Will Summer Sun Mean Summer Slump - - -

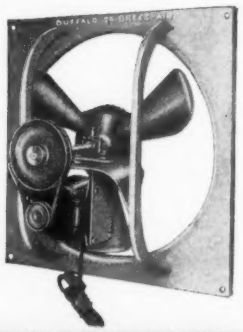
## or New Profits for You ?

Homes like these contain prospects for Breez-Air Home Cooling Fans.

If long hot summers are the rule in your city, that's your cue to write today for complete details on the Buffalo Breez-Air Home Cooling Fan franchise.

Breez-Air fans, introduced a few years ago to solve the home cooling problem quietly and at low cost, have gained national recognition for their outstanding performance.

If you are interested in increasing your summer profits, and adding to your reputation for selling the finest in home cooling comfort —write us today for complete details.

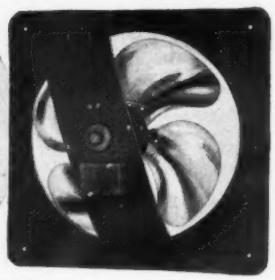


**BUFFALO FORGE CO.**
210 Mortimer St., Buffalo, N. Y.
Branch Engineering Offices in Principal Cities

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

# "Buffalo" BREEZ-AIR FAN
## The Quality Home Cooling Fan

STREAMLINE DESIGN.
TOTALLY ENCLOSED MOTOR.
SELF-LUBRICATING BEARINGS, WITH WOOL PACKED OIL RESERVOIR.
CHROME PLATED FAN BLADES.
QUIET OPERATION.
EASY-TO-MOUNT FRAME.



## SIGNAL *Challenger* VENT FANS

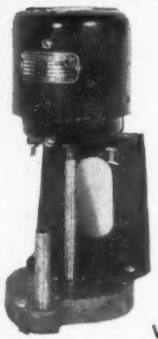
Establish a new idea of value . . . meet the demand for something modernly different, yet practically efficient and dependable at outstandingly low price . . . Streamlined, these fans are value plus . . . note the features above . . . adaptable for installation in walls, windows, and transoms . . . write for complete catalog information.

*Branch Offices:*
*W. E. Hopper, 357-59 Marietta St., Atlanta, Ga.*
*Geo. E. Anderson Santa Fe Bldg., Dallas, Texas*

3 SIZES } 10" — $ 9.80 list
12" — $12.50 list
16" — $16.50 list

SIGNAL ELECTRIC MFG. CO.
Menominee, Michigan

SIGNAL



## K & H Evaporative Cooler Pumps

*— Built for Service —*

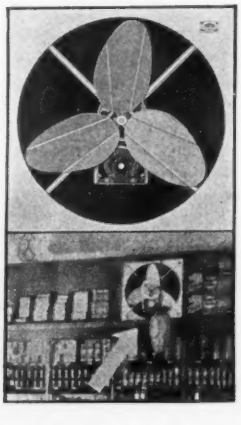
Fully Enclosed Motor (Water-proof) . . Needs Oiling Only Once a year

YOUR PUMP TROUBLES ARE OVER WHEN YOU INSTALL K & H

*Write for Information and Prices*

We Also Make Blowers—Very Attractive Prices

K & H MFG. CO., 3410 Ross Ave., DALLAS, TEXAS



## *The New, LOW COST* ALLVENT FAN

FOR ALL VENTILATING PURPOSES

● How would you like to have a propeller fan that answers every requirement for Comfort-Cooling ventilating jobs? One that is so QUIET in operation it can be used in stores and offices,—so rugged and sturdy it can handle the toughest industrial assignment. ALLVENT "V" Belt Drive Fan is such a unit,—featuring diversified air capacities, maximum flexibility! The price?—*Amazingly LOW!* Write for Bulletin 206.

*Interested in ATTIC FANS? See the one shown on introductory page of Air Cond. Sect., (this publication). Write for Bulletin 40.*

AUTOVENT FAN & BLOWER CO.
1825-27 N. Kostner Ave., Chicago, Ill.

-the HALL Commercial KUMFORT KOOLER which costs only 1/5 as much

HALL

Now, these balmy spring days, notice the wide open doors up and down every street. Open doors create a mood that helps sell the Hall Commercial Kumfort Kooler. Merchants, offices, businesses of all kinds, realize that before long, torrid summer days will make cooling equipment a business necessity. The Hall Commercial Kumfort Kooler meets the needs of hundreds of business establishments where more expensive installations are "out" because of cost. Engineered on the evaporative principle, this equipment costs only about one-fifth as much, gives every business full advantage of air-cooling at a price it can afford. Write today for complete details about a dealer franchise in your territory—a new avenue to new profits.

**HALL MANUFACTURING CO., Cedar Rapids, Iowa**

## A few reasons why HALL Commercial KUMFORT KOOLER is *easy* to sell

1. Unit cost is about one-fifth as much (or less). High installation costs are eliminated.
2. Operating costs are extremely low, are offset many times by additional business created.
3. Cools to proper comfort point—8 to 12 degrees below outdoors. "Effective" temperature even lower.
4. Greater employee efficiency results because it uses 100% fresh, filtered and cooled air—eliminates three o'clock headaches.
5. Dust, dirt and odors are effectively eliminated. Inside pressure counteracts infiltration of dust—a real factor in many localities.
6. Hall Roto-Atomizer insures even saturation, essential to an effective job of air cleaning and comfort cooling.
7. Cooling commences the moment the unit is turned on—no long precooling period is necessary.

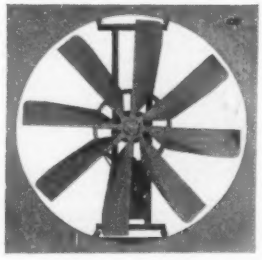
**NOTE** FACTORY ENGINEERING SERVICE is available for analysis of installation data and plans — additional assurance of customer satisfaction.

## NO TROUBLE CALLS to cut your profits

Coolair TRADE MARK

## ATTIC FANS

COOLAIR dealers from coast to coast have the jump on competition . . . *and they know it* . . . because no other attic fan can offer all these features — Quality Points that keep customers satisfied and protect your profits against costly trouble calls.



1. Patented built-in springs that eliminate vibration noise.
2. Oversize ball bearings in fan hub for lifetime service.
3. Eight large blades—lower tip speed, quieter air flow.
4. Light compact steel construction throughout—no cheap materials to warp, twist or tear loose.
5. Certified air ratings, according to ASHVE Test Code.
6. Right size fan for every home or commercial job—26 inches to 9 feet in diameter, up to 150,000 cfm.
7. Five-year guarantee on residence fans, backed by pioneer manufacturer in home-cooling field.

Unequalled Customer Satisfaction, plus a complete program of magazine and newspaper advertising, dealer direct mail and other sales helps, means greater profits for you with Coolair. Start selling the Coolair line now!

GET THIS FREE CATALOG . . .

**MAIL COUPON TODAY!**

Send the whole Coolair profit story to:

NAME _____

ADDRESS _____

CITY _____ STATE _____

Coolair Ventilating and Cooling Systems

AMERICAN COOLAIR CORPORATION

Manufacturers . . . . JACKSONVILLE, FLORIDA

Cash in on VICTOR $
Thermometer Sensitized
FAN PROMOTION

Backed by an aggressive thermometer sensitized promotion, the new Victor Fan Line will turn the heat into cool profit for you.

You'll want the new Victor Fan Catalog and the Victor Push. Complete details about this fast-selling Fan Line for 1940 and the push behind it. Hurry. Write or wire at once. Get set for your most profitable FAN YEAR with VICTOR NOW!

VICTOR
ELECTRIC PRODUCTS, INC.
Dept. J-3004
2950 Robertson Ave. - Cincinnati, Ohio
Quality is always VICTOR

contracting firm of Hunter Electric Company; and secretary, Norman Tindal, lighting engineer of the Duke Power Company.

Charles B. Miller, Jr., assistant manager, Charlotte branch of the utility, and E. V. Sapp, president, Economy Electric Company, continue as members of the Bureau. Mr. Miller is chairman of the Advertising and Publicity Committee and Mr. Sapp represents electrical contractors.

In advising the National Bureau of Mr. Bouligny's appointment, Mr. Miller said, "We felt particularly fortunate in getting him to accept the chairmanship of the Bureau as he has an enviable reputation with all of the electrical industry."

Mr. Miller also stated that the local Bureau intends to make a canvass of the people who, at the present time, are living in certified adequately wired homes to get statements from them as to the advantages they see in having their homes adequately wired.

## Room Coolers Now Financed by EHFA

Emil Schram, president of Electric Home and Farm Authority, announced today that self-contained room coolers had been added to the list of appliances which the Authority finances. Current models only, with capacities of one horse-power or less, will be eligible.

As in the case of other appliances financed by the Authority, this type of air conditioning equipment will be financed when retailed to customers by approved dealers in territories served by utilities which have agreements with the Authority providing for the collection of installment payments. A minimum down payment of five per cent of the cash installed price will be required and the coolers may be paid for over periods as long as thirty-six months for individual units and forty-eight months when these units are sold in combination with other major appliances.

The extension of the EHFA low-finance-rate plan to this field will make it possible for consumers to purchase and use air conditioning equipment in their homes on a more economical basis. It is anticipated that this action will be helpful not only to consumers, but also to appliance dealers, manufacturers, and utilities by helping them to obtain a wider distribution and use of this equipment.

## N.E.M.A. President Will Address Contractors

May 2 will be a busy day for North Carolina electrical contractors who will gather in Greensboro, at the O'Henry Hotel, for the annual meeting of the North Carolina Association of Electrical Contractors. Morning, afternoon and evening sessions will be held. The previous practice of the Association to hold closed sessions principally has been abandoned in favor of open sessions to which all members of the electrical industry have been invited.

Featured speaker at the evening dinner meeting will be C. E. Swartzbaugh, president of the National Electrical Mfgs. Assn., and president of Swartzbaugh Mfg. Co., Toledo, Ohio.

Scheduled for talks to the meeting during the morning and afternoon sessions are: H. M. Horton, General Electric Co., Atlanta; N. E. Cannady, State Electrical Engineer, Raleigh; Roy A. Palmer, Duke Power Co., Charlotte; Frank Hartis, member of N. C. Board of Examiners of Electrical Contractors, Durham; R. W. E. Moore, National Electrical Products Co., Pittsburgh; Laurence W. Davis, general manager, National Electrical Contractors Assn., New York; and Ralph Robinson, Robinson Electric Co., Charlotte.

**This new and attractive modernistic building now houses the Scott Electric Company, of Palmetto, Florida.**

## Tulsa Dealer Elected Mayor

Successful for 29 years in the electrical business in Tulsa, C. H. Veale has just been elected mayor of the city over a large and impressive field of candidates, and

C. H. Veale

will assume office May 7. He owns and operates the C. H. Veale Electric Co.

Mr. Veale campaigned on a platform of more business-like government and encouragement for new businesses and industries to locate in the city.

Tulsa's new mayor was born on a South Dakota ranch. In 1905 he went to Sapulpa, near Tulsa, and there helped build the city's first power plant. Twenty-nine years ago he came to Tulsa.

"I believe my experience in the electrical business will help me in my duties as mayor," he remarked, recently. "The principles of good business apply to both positions."

## Personnel Changes Announced by Graybar

Claude G. Matthews, former resident of Houston, was recently appointed Houston manager of Graybar Electric Company, Inc. Mr. Matthews is not a stranger to the "old timers" in the electrical business in Houston as he first went there in 1905 and worked for an electrical contractor for about two years, during which time he helped wire the old Milby Street car barns of the Houston Electric Company. He went to St. Louis for two years and came back in 1909 as chief electrician for the Houston Electric Company. During his service in this capacity he had the responsibility of seeing that the interurban cars of the Galveston-Houston Electric Interurban were gotten ready for service.

C. G. Matthews

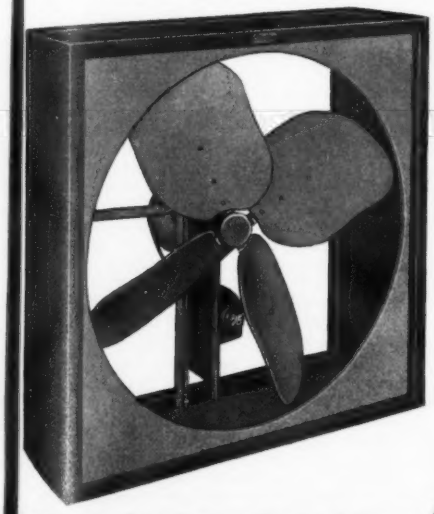
Mr. Matthews was transferred to the Galveston Electric Company in Galveston in October, 1912, as distribution and meter superintendent and remained in that position until June, 1916.

He was then employed by the Western Electric Company as North East Texas salesman. He remained in that position for a year and was transferred to San Antonio for the duration of the World War. At the expiration of the War, he was again moved by his company to Dallas and in 1924 was made Texas sales manager for the Western Electric Company. He remained in this position until

(*Continued on page* 58)

**STAKOOL Ventilating FANS**

**Attic, Window and Floor Models**



LIST PRICES
24" ..$ 47.50
32" ..$ 57.50
44" ..$ 80.00
54" ..$125.00
4500 to 16000 CFM

Low priced, factory-built tunnels, with grilles, or grilles only furnished for attic fans.

FAN BLADES Only $6.90 to $17.50 List Price

All prices F.O.B. Factory.

Engineered for Quiet, Efficient, Economical Operation
G-E Motors with THERMO-TECTORS used exclusively
R.H.F.A. Approved—Five Year Guarantee
Liberal Discounts to Distributors and Dealers
Write for DEALER'S MANUAL containing full information for selling and installing fans

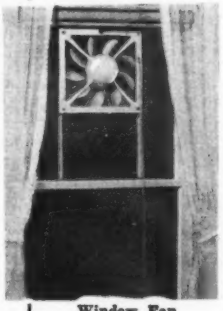
TRADE STAKOOL MARK

**MANKER PRODUCTS COMPANY, INC.**
MEMPHIS, TENNESSEE

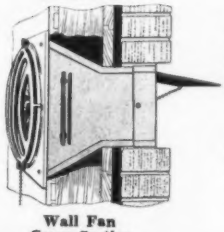
**PROFIT WITH THIS NEW**

Coolair TRADE MARK

**Kitchen Ventilator**



Window Fan Inside View



Wall Fan Cross Section

Smart, streamlined, beautifully finished, this new kitchen ventilator completes the profitable Coolair line of ventilating and cooling fans. Keeps you from missing sales, opens the door to sales of larger fans and fatter profits!

Patented window fan fits into window pane *without shutting off light!* Release chain, glass cover opens, fan starts. White porcelain and cadmium or chrome plate throughout. Easy to install in any type window.

Wall models with adjustable sleeves fit any type of wall construction. Three wall, two window models listing from

**$19.75**

WRITE FOR FREE CATALOG
Mail Coupon Today

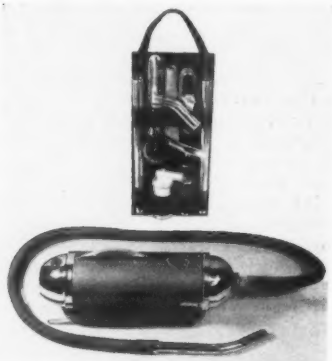
American Coolair Corporation,
Jacksonville, Florida
Send me full details on your kitchen and attic fans.

Name _____
Address _____
City _____ State _____

### New Multi-Job Cleaner

Described as a complete home cleaning service because of the many functions it performs, a new cylinder-type vacuum cleaner known as the "Pacemaker" is announced by the Merchandising Division, Westinghouse Electric & Manufacturing Company, Mansfield, Ohio.

The new cleaner provides a complete home cleaning service because in addition to cleaning rugs, it does many other cleaning jobs in the home, including: cleaning linoleum, hardwood floors, upholstered furniture,



draperies, walls, overall dusting, cleaning lamp shades and venetian blinds, shampooing of rugs, spraying of insecticides, spraying paints and lacquers, spraying liquid wax on linoleum and wood floors, moth prevention, and purification of air.

The cleaner cylinder is all-steel, finished in a baked-on gray hammered effect, and the ends are of polished chromium. The cleaner stands on end for ease of removing dust. Placed in the center of a room, the cleaner has a 26-foot cleaning radius. All tools are protected by soft rubber bumpers.

### Hotpoint Aristocrat Range

Anticipating the popularity of massive styling in kitchen appliances, the Hotpoint Company has announced a new "Aristocrat" electric range with high, massive backsplasher. This new range will replace the former Aristocrat model, now discontinued from the Hotpoint line.

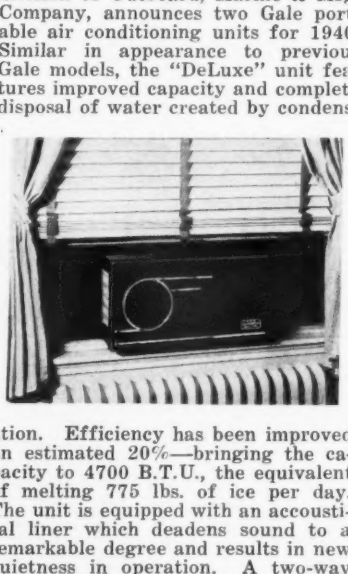
The new Aristocrat is a DeLuxe

Hotpoint range, fully-equipped with the new 1940 Hi-Speed, Select-A-Heat (5 heat) Calrod surface units, six-quart Hi-Speed Thrift Cooker with five heats, and oversized, All-Purpose, double-unit oven, with automatic temperature control. It is made with Hotpoint's one-piece Monotop cooking top, finished in gleaming white porcelain enamel, with chromium-finished, all-metal hardware and trim.

This range is sold fully-equipped with the beautiful white Timemaster oven timer-clock, four-louvered Venetia-Lite cooking top lamp, and two white condiment jars. Two convenient appliance receptacles are located in the grille-work of the backsplasher. There are two large utility drawers, one equipped with a special cutlery tray and a warming compartment drawer equipped with a 400-watt Calrod unit, individually-concontrolled by a convenient toggle switch. The master pilot light in the backsplasher glows when any switch is turned on at any heat (including warmer).

### Gale Air Conditioners

Gale Products, Galesburg, Illinois, division of Outboard, Marine & Mfg. Company, announces two Gale portable air conditioning units for 1940. Similar in appearance to previous Gale models, the "DeLuxe" unit features improved capacity and complete disposal of water created by condens-



ation. Efficiency has been improved an estimated 20%—bringing the capacity to 4700 B.T.U., the equivalent of melting 775 lbs. of ice per day. The unit is equipped with an accoustical liner which deadens sound to a remarkable degree and results in new quietness in operation. A two-way switch permits the "DeLuxe" unit to operate as a circulator only, without the cooling, for year 'round ventilation. An adjustable grille directs the air flow. All water from condensation is vaporized and discharged outside in the form of a light mist.

The Gale "Standard" Portable Air Conditioning Unit is basically the same in operating principle as the "DeLuxe" unit but slightly smaller in capacity—4000 B.T.U.—and without all the refinements of the other model.

### New Crosley Ranges

New and greatly improved features mark the new 1940 line of Crosley electric ranges, just announced. One of the important features is the big oven used in all models, from the apartment size to the large deluxe model. Not only are all ovens in the different models the same size but all have two inches of fibre glass insulation, giving them great capacity and preventing loss of heat.

The new Crosley electric ranges feature the one-piece seamless top, the finest Chromolox super-speed top units, each with 6-heat control switches, and Chromolox Heat Flo units with 5-heat switches. The ovens in all models are 17 inches wide, 15 inches high and 20 inches deep. They are equipped with the latest type indicating thermostat for accurate, automatic heat control, and provide fast pre-heating.

### Philco Refrigerator

Embodying unique design features, the 1940 Philco refrigerators, styled by Harold Van Doren & Associates, Toledo, O., industrial designers, strike a new note in refrigerator appearance styling. The new Philco is a streamlined, stately cabinet styled to

supplement the modern kitchen and at the same time to provide new utility. The exterior is a one-piece monolith, with a gracefully lined center panel. The casing is so planned in one piece of drawn steel that there is no separate top, sides or joints.

The thickness of the refrigerator door is concentrated on the outside to harmonize with the general plan of the rounded lines and to permit the use of Philco's exclusive "Conservador," the shelf-lined inner door which is said to give the consumer 26 per cent more usable space. A specially styled door latch enables opening of the outer door alone or both the outer and inner door by a slight tough.

### G-E Water Heater

Two new electric water heaters one round and the other square in shape, designed specifically to implement new or modernized electric kitchens but equally appropriate for general purposes, have been announced by the General Electric appliance and merchandise department, Bridgeport.

The new round-type heater has a ten gallon capacity and is approximately 17½ inches in diameter and 31 inches high. It was designed to fit under the work surface in a kitchen and particularly for use with the G-E electric dishwasher. It has the advantage of permitting installation

# What's a Week in the Life of a Power Cable?

IT takes years, not weeks, to measure the life expectancy of an electric cable. No laboratory test has yet been devised that reproduces the conditions encountered in service.

That's why we base all cable recommendations on actual performance, never on empirical short-term tests. When our engineers recommend a rubber insulating compound, it's because that compound has given remarkably good service in similar applications.

*For Example:* Back in 1909, American Steel & Wire Company made the first non-leaded submarine cable, insulated with a special water-resistant compound since called Amarine. That cable, after conducting power at 25 KV across the St. Lawrence River for 31 years, when inspected recently, was found to be "still in excellent condition, good for many more years of service."

That's 31 years of immersion in water and mud, of direct burial of shore ends in acid and alkaline soils, and of exposure of pole risers to extremes of heat and cold—the same conditions, in exaggerated degree, that are found in many less exacting applications.

Here is real proof that American Steel & Wire Company knows how to engineer and manufacture cables for long, trouble-free service.

## *These rubber insulating compounds offer long, trouble-free service*

**AMERITE**—a 30% Class AO compound for general underground or aerial service.

**AMARINE**—a 40% rubber compound recommended especially for non-leaded submarine service.

**AMPEROX**—a heat-resistant compound of the superaging type for operation at temperatures up to 75°C.

**AMERCLAD**—a jacket compound which offers unsurpassed resistance to abrasion and mechanical abuse.

**AMERICAN STEEL & WIRE COMPANY**

*Cleveland, Chicago and New York*

Columbia Steel Company, San Francisco, *Pacific Coast Distributors*

United States Steel Export Company, New York

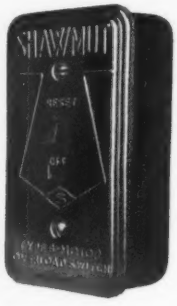
**UNITED STATES STEEL**

in the kitchen close to the sink for maximum efficiency and economy. The heater is finished in white and has a galvanized copper bearing steel tank.

The new square-shaped heater, also finished in white, has a galvanized copper bearing steel tank with a capacity of 18 gallons. A backsplasher can be supplied as an accessory, or as part of the water heater, and is designed for installation next to and in harmony with a General Electric range or other standard-height appliance or cabinet.

### Motor Overload Switch

The Shawmut Type B motor overload switch is a manually operated auxiliary circuit breaker, combining off-and-on switching with thermal overload protection. Designed for use with fractional horsepower motors, the Type B switch can be ob-




tained either in the open-type or enclosed-type. The mounting bracket and operating handle fit standard boxes and cover plates, and allow a variety of flush and surface mounting applications. It is manufactured by the Chase-Shawmut Company, Newburyport, Mass.

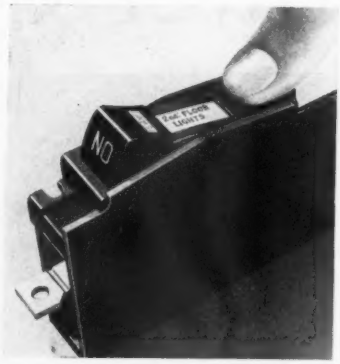
### New Fluorescent Lamp

A new 85-watt, 58-inch fluorescent lamp producing white light and designed especially for industrial service has been announced by both the Westinghouse Lamp Division and General Electric Lamp Department. Designated as type RF, the new lamp may be operated on either 105-125 volts or 210-225 volts, 60-cycle, a-c circuits in special equipment which provides direct current through the use of a rectifying device.

Shown here are two of these lamps in a fixture designed especially for their use. It is rated at 200 watts and operates two lamps with a combined initial rating of over 8000 lumens. The fixture consists of a self-contained auxiliary mounted on a porcelain enamel reflector.

### Bulldog Circuit Master

A combination switch and automatic circuit breaker, designated as the Circuit Master, has just been announced by the Bull Dog Electric Products Co., Detroit, Michigan. The



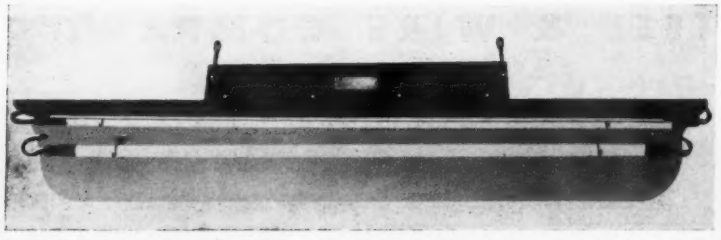

new breakers are available for 120 volts a-c and 120-240 volts a-c, from 15 amperes to 50 amperes. They are listed by Underwriters' Laboratories.

Designed to provide a combination unit for snap-action, on and off manual switching, plus automatic opening on overloads or short circuits, the new unit has been made extremely simple in construction and operation. Only six operating parts are required in addition to the enclosing case. Features of the new breaker are husky rocker handles, distinguishing automatic signal indicator, a wiping or cleaning action on contacts, solderless wired grips for terminals, and a space for circuit name cards.

### Motor Starters

Cutler-Hammer, Inc., Milwaukee, Wis., has announced a number of improvements in their Bulletin 9586 Across-the-Line Starter for the control and protection of pulyphase squirrel cage motors up to 5 horsepower.

The improvements include: (1) The streamlined, simplified, hook-on cover, held by one fastening screw, can be removed for easy installation. This type of cover permits group panel mounting with minimum clearance between adjacent starters. (2) Loosening one screw permits removal of the operating mechanism for easy wiring and conduit work. (3) The contacts, dust-safe vertical, are now made of much heavier "fine" silver. Lava insulators protect contact springs against even minor heat transmission, thus insuring full contact pressure at all times. For protection against rust, the contact springs and contact supports are made of stainless steel—all other metal parts are cadmium plated. (4) The C-H "drop of solder" overload relay has been made smaller in size, more accessible, with better operating characteristics. Overload trip indication is a further improvement.



### Unbreakable Mercury Relay

The new Durakool mercury relay utilizes the unbreakable metal body of the now-famous Durakool mercury switch and the displacement principle with solenoid actuation.

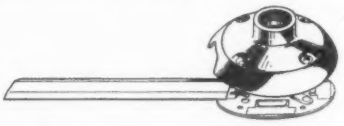
The new mercury Relay embodies several outstanding features. The contact structure is hermetically sealed, making the relay especially suitable for use in corrosive or explosive atmospheres. The relay may be operated up to 300 times per minute. There is little friction and no wear in operation. The inherently rugged and simple construction eliminates risk of breakage in shipment or operation. The relay requires no maintenance or attention. No glass is used in its construction.

The durable metal body is specially treated to hold a gas at a pressure of 4 atmospheres—an important feature in the reduction of ionization between the contacts. Contact resistance is as low as .002 ohms. On A.C. supply, as little as 1 watt is required for normal closing operation, and only 1.5 watts for normal opening operation. On D.C., the operating energy required is but .25 watts.

Manufactured to meet ordinary requirements, it is also available for special requirements up to 200 amperes' capacity. Also relay tube, or tube and solenoid may be ordered separately. It is of especial interest in the fields of thermostatic controls, elevators, radios and telephone manufacture. For full details, write Durakool, Inc., Elkhart, Indiana.

### New Floor Outlets

The Wiremold Company, Hartford, Connecticut, announces a new brass utility box fitting, No. 1542B, for use with the Wiremold "Pancake" overflow raceway wiring system, and de-



signed to take any standard ¾" stem type floor outlets for power and light or telephone circuits. This new utility box is of extra heavy construction offering a sturdy base for the fittings and designed to meet the requirements of heavy duty service. Addition of this new fitting still further increases the utility and flexibility of "Pancake" overfloor system for a wide range of office, commercial building and industrial plant wiring.

### RLM Fluorescent Luminaire

A new 48-inch, 2-lamp, 40-watt fluorescent luminaire with spread distribution designed for general or supplementary lighting in low bay industrial areas is announced by the Westinghouse Electric and Manufacturing Company. The units are furnished wired complete with hood, reflector,

# EASY . . . to demonstrate . . . to sell . . . to install

## WIREMOLD'S NEW TWIN LAMP FLUORESCENT LIGHTING UNITS

- Special ALZAK distributing type reflectors.
- Completely SELF-CONTAINED ready to install.
- High Power Factor 2-lamp Controls.
- SMOOTH, streamlined, dust-shedding exterior.
- Wired COMPLETE with loops for hanging and 8 ft. wire leads.
- CORROSION resisting aluminum lacquer finish hood.

You have wanted well-designed, high quality, easy-to-sell and install Fluorescent Lighting Units, that would be equally suitable for industrial and commercial use.

Wiremold has waited until we could give you such units so RIGHT in design and construction that we stand squarely behind them with the same guarantee that covers every item in the Wiremold lines.

Now these New Wiremold Twin-Lamp Fluorescent Units are READY . . . a distinct advance in design, construction and overall efficiency at a price that enables you to sell Fluorescent Lighting for an increasingly wide range of applications.

Note the many unusual features of these attractive new units, their quality, construction and attractive appearance. Lose no time in sending for detailed information and prices. Also, be sure to have at least one unit for display and demonstration purposes.

Write direct to Hartford or to your local Wiremold representative.

O. T. JENKINS, Santa Fe Bldg., Dallas, Texas
H. C. BIGLIN, 177 Harris St., N. W., Atlanta, Ga.

*Your Business Builder*

THE WIREMOLD COMPANY, HARTFORD, CONNECTICUT

ADEQUATE WIRING SERVES AND SAVES

WIREMOLD

LIGHTING and WIRING EQUIPMENT
LISTED BY UNDERWRITERS' LABORATORIES, INC.

lamp holder, lamp starter and ballast equipment for 110-120, 199-216 or 220-250 volt circuits.

The hood is of sheet-steel hinged to the reflector with knockouts at each end to provide for end-to-end mounting and straight-through wiring. Finish is of smooth silver gray baked enamel. The reflector is white porcelain enameled steel, and has an over-all efficiency of 78 per cent with a cutoff of 72½ degrees from vertical when viewed normal to the lamp. Units are arranged for rigid conduit, flexible conduit, or chain suspension mounting.

### Combination Starter

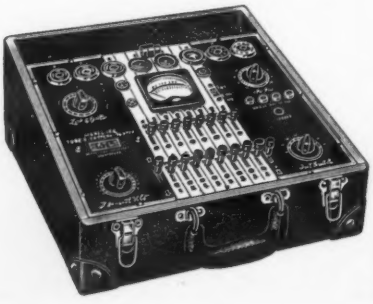
The Trumbull Electric Mfg. Company, Plainville, Conn., recently made available a new compact magnetic combination starter, combining a motor circuit disconnect and a magnetic

starter in one unit for use on motor circuits from one to 25 hp, 600 volts a-c capacities. This device is especially compact and features interchangeable contacts and removable interior. It is arranged for convertible fusing and front operation. The starters are described fully in a new circular No. 200, available on request.

### Radio Test Equipment

Radiotechnic Laboratory, Evanston, Illinois, has announced the Model 120, an innovation in tube testing. The PMT circuit switching is an outstanding feature of this instrument. It is designed to accommodate any possible combination of heater and control elements of all existing sockets, and for all tubes that may be introduced in the future. In the event of new sockets, space is provided, and wiring would only be made to an adjacent socket.

All tubes, including loctal, single-end, miniature, Hytron Bantam, Raytheon CK series, 50, 70, 117 volt series, pilot lamps and Christmas tree bulbs can be accurately tested on this new instrument. Gaseous rectifiers are also tested with proper operating voltages.



The 120 is available in two models: the counter, which has a sloping metal case with a slide drawer to hold the tube chart; the portable model is mounted in an attractive leatherette case. Stock switches are used throughout, thereby keeping the cost at a minimum. Three D.C. ranges, 0-10V, 0-100V, and 0-1000V, are available for the testing of batteries and D.C. power supplies.

### Surface Wiring Units

Illustrated here are several units of the line of Surfolets recently introduced by Porcelain Products, Inc., Findlay, Ohio. These units consist of a single porcelain base designed for surface mounting with six interchangeable outlet fixtures. They can be installed on any job calling for non-metallic surface wiring and are listed by Underwriters Laboratories.

The various outlet units, for use with a standard base, include a keyless lamp receptacle, a duplex receptacle, pull chain lamp receptacle, rosette, single pole tumbler switch, three-way tumbler switch, and blank junction box.

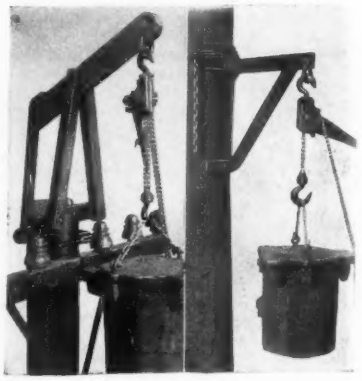
### Motor Slot Insulation

A new type of slot insulation has just been announced by the New Jersey Wood Finishing Co., Inc., Woodbridge, N. J. Designated as Varslot, this material is a newcomer to the Vartex line and is claimed by the manufacturers to be one of the greatest advancements in combination slot insulation in recent years. It is made from 100% rag paper combined with Vartex black bias varnished cloth by a special adhesive and retains unusual flexibility.

Among the advantages claimed for Varslot are: availability in sheets, continuous length rolls, piece or tape form; maximum flexibility and adhesion; greater tearing strength; elimination of buckle when placed in slot; dielectric strength that is not reduced by normal bending; ease with which it can be cut, slit or punched; and the fact that it does not get brittle with age.

### New Transformer Gins

The Coffing Hoist Company, Danville, Illinois, manufacturers of the well-known Safety-Pull ratchet lever hoist and other utility maintenance



tools, announces two new transformer gins. The gin shown at the left can be easily clamped on the top of a pole for lifting transformers, load pots, lead cables, etc. It is so constructed that it is a non-conductor of electricity. The latest gin developed by Coffing is the one at the right. This gin is designed to clamp on the side of the pole and in many cases is more desirable than the pole top gin. These transformer gins fit any size pole and have been tested to more than 3000 pounds without any signs of yielding.

### Open-Side Thimble Clevis

Hubbard and Company's Open-Side Thimble Clevis is the answer to the problem of line threading. It entirely eliminates this major difficulty so often encountered by linemen and is further correctly designed so as to make injury to the conductor practically impossible. This new strong, light weight clevis is intended for angles up to 60 degrees and the line may be tied-in on the pole or ground.

Among the many advantages claimed for this thimble clevis are: open side which eliminates threading difficulties; smooth galvanized finish; designed so that it cannot injure conductor; strong but light.

Attachment bolt furnished is ½-inch although the mounting hole will accommodate a ⅝-inch bolt. Diameter of the thimble is 3¼ inches and the wire groove ¾-inch. For further details write Hubbard and Company, Pittsburgh, Pa.

# Reader's Service

**Helpful booklets and catalogs are offered by many of the advertisers in ELECTRICAL SOUTH. Go through the magazine pages and write down in the space below the names of those advertisers in whose products you are interested. Often our readers would like to secure additional information on certain lines advertised in the paper but do not have the time to write for it. We shall be glad to help you by forwarding your name to the advertisers.**

---

**Advertising Department,**
**Electrical South,**
**1020 Grant Bldg.,**
**Atlanta, Ga.**

**Please have sent to me, without obligation, the catalogs, booklets, or additional information on the products of the following manufacturers:**

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

. . . . . .

**Name** . . . . . .

**Street or P. O. Box No.** . . . . . .

**City** . . . . . **State** . . . . . .

## New Publications Available to the Trade

**Capacitors for Fluorescent Lamps.** A four page folder describing capacitors for power factor correction of fluorescent lamps. It includes application data and list prices on Type KF units. Ask for Catalog No. 190A. Cornell-Dubilier Electric Corp., South Plainfield, N. J.

**Fluorescent Lighting Equipment.** An eight page folder giving the latest information on fluorescent lighting equipment. It includes a description of Wakefield's latest development, the Grenadier fluorescent fixture. Designated as Bulletin No. 44, Schedule E, this booklet is available from the F. W. Wakefield Brass Company, Vermilion, Ohio, on request.

**Dualcote Conduit.** Titled "A Tale of Salt Water," this folder outlines the ability of Dualcote to withstand corrosion when installed in seacoast locations. Copies of the bulletin are available from Walker Brothers, Conshohocken, Pa.

**Victor Fan Catalog.** A 12-page booklet in three colors illustrating and describing the complete line of Victor fans. Considerable space is also devoted to the Victor In-Bilt ventilators and Force-Air fans. Write to Victor Electric Products, Inc., Cincinnati, Ohio, for your copy.

**Skilsaw Electric Tools.** The complete line of Skilsaw portable electric tools are described in catalog No. 41, a comprehensive publication of 51 pages. The line includes hand-saws, drills, belt sanders, hand grinders, disc sanders, blowers, floor sanders, bench grinders, etc. Copies of the catalog are available from Skilsaw, Inc., Chicago, Ill.

**Hospital Signal Systems.** Seventy-three pages of catalog and application data on signal systems of all kinds designed especially for hospitals are contained in this newest publication designated as Bulletin No. 102. Copies are available from the Connecticut Telephone & Electric Corporation, Meriden, Conn.

**RLM Fluorescent Luminaires.** RLM fluorescent lamp luminaires with porcelain enameled reflectors are described in this new booklet which includes detailed information on construction and mounting of the new units, as well as other helpful data. Ask for leaflet 61-152 in writing Westinghouse Lighting Division, Cleveland, Ohio.

**Overpower and Underpower Relays.** Catalog and application data on the IKW overpower and underpower relays are included in a four page folder offered by General Electric Co., Schenectady, N. Y. Ask for publication GEA-3273.

**Type AIRS Regulators.** Application suggestions and other descriptive data on the new AIRS voltage regulator, offered as the solution to hundreds of industrial voltage control problems, are contained in a descriptive folder available from General Electric Company, Schenectady, N. Y. Ask for publication GES-2285.

**Radio Test Equipment.** Catalog No. 122 describes a wide range of radio test instruments. Copies are available upon request from the Radio City Products Co., 88 Park Place, New York City.

**Fluorescent Daylight Lamps.** Miller fluorescent daylight lamps for desks, drafting tables, work benches, etc., are described in this new four page bulletin. For copy write The Miller Company, Meriden, Conn.

**Fractional Horsepower Motors.** Fractional horsepower motors in sizes from 1/20 to ¾ hp, and designed especially for small industrial machines and home appliances, are described in this new four page bulletin available from Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa. Ask for bulletin F-8548.


BIGGER PROFITS BETTER PRODUCTS

1. *"Wire-Nuts."*—Solderless—tapeless Wire Connectors. Skin wires — Screw on — *That's All! One size* for all common wiring joints. Fully Approved. MILLIONS IN USE!
2. *"E-Z" Wire Strippers.*—Strip the *toughest* insulations without nicking or cutting strand. Strip solid or stranded wires from No. 30 gauge to No. 5.
3. *Cable Ripper.*—Easily and quickly rips non-metallic sheathed duplex or lead covered cable.
4. *Joist Boring Machine.*—Ends tiresome and dangerous reaching. Bores at any angle—reaches up to 11 ft.
5. *Fuse Clip Clamps.*—For Ferrule or Knife type clips. Seven sizes.
6. *Fish Tape, Reel & Puller.*—*NOW* fishing *IS* a pleasure. Keeps tape reeled up—no expensive tape breakage—no "live" contacts. NEW! "Junior No. 0" size—$2.50. Easily fits in tool kit.
7. *Test-Lite & Fuse Puller.*—Tests live circuits. Pulls fuses.
8. *Fuse Reducers.*—Stop over fusing. Many sizes.
9. *Fuse Pullers.*—Laminated fibre, four sizes.

IDEAL SOLD THROUGH JOBBERS

*Electrical Products Division*

IDEAL COMMUTATOR DRESSER COMPANY

1017 Park Avenue Sycamore, Illinois


## Graybar Appoints New Branch Managers

(*Continued from page* 51)

August, 1930, at which time he was transferred to Milwaukee, Wisconsin as manager for Graybar. In January of 1938, Mr. Matthews was transferred to Boston, Massachusetts, as sales manager for New England, and in May of the same year he was made manager.

* * *

Effective April 1, R. S. Robinson was appointed manager of the Graybar Electric Company's branch office in Tampa, Florida. Mr. Robinson has served the company for 28 years, having commenced his career in 1912 with the supply department of the Western Electric Company, now Graybar.

He is well known in the electrical supply business throughout the South, having served in capacities as salesman and sales manager in the Graybar offices located in Atlanta, New Orleans, Jacksonville, and Orlando.

Also effective the 1st of April is the appointment of L. M. Smith as sales manager of the Graybar branch office in Orlando, Florida. Mr. Smith has been with the company since 1929, and has previously been located with the Graybar offices in Jacksonville and Miami.

## Personnel Changes

(*Continued from page* 44)

named as assistant to Mr. Kanker, will conduct all office operations on ranges. The appointments follow a spectacular jump in sales of all types of ranges which, during the last three months, rose more than 79 per cent above deliveries in the same period of 1939.

Mr. Kanker's entire business life has been spent in the appliance industry which he entered as an employee of the old Majestic Range Company at St. Louis. Before assuming his present position, he served successively as sales manager for the Favorite stove organization and for Detroit Vapor Stove.

In taking over his new position, Mr. McCarthy will retain a previous responsibility, management of the Norge kitchen planning and apartment house department which handles apartment house installations and maintains relations with Norge outlets among utility companies. He came to Norge recently after 10 years with Westinghouse Electric and Manufacturing Company.

* * *

Sharp increases in Eureka sales have necessitated expanding the company's sales personnel. **H. W. Burritt,** president of the Eureka Vacuum Cleaner Company, has announced the appointment of **J. W. Purvis** as Western regional sales manager and **O. H. Golberg** as eastern regional sales manager. The newly appointed regional sales managers have both had extensive sales experience in the appliance field and are well known throughout their respective territories.

* * *

**L. Morris Landers,** Walton Building, Atlanta, was recently appointed southeastern district representative for the Goodrich Electric Company, of Chicago, manufacturers of lighting fixtures and reflectors. Associated with Mr. Landers is **J. Paul Lumpkin.**

* * *

**J. B. Morrison,** Bona Allen Building, has been appointed southeastern representative for the Twentieth Century Engineering Company, Man-

kato, Minn., manufacturers of a variety of items in the fluorescent lighting field.

* * *

The Simplex Wire & Cable Company, at its recent annual meeting, elected **Henry A. Morss, Jr.**, as a vice president.

* * *

Oliver Iron and Steel Corporation, Pittsburgh, has announced the appointment of **Joseph H. Beaty** as their exclusive pole line hardware district sales representative in the states of Alabama, Georgia, Tennessee and northern Florida—with headquarters at Birmingham, Alabama.

For the past twenty years, Mr. Beaty has been identified with the sales and engineering departments of both Westinghouse Electric & Manufacturing Company and with Wagner Electric Corporation, and is well known in the electric utility field.

* * *

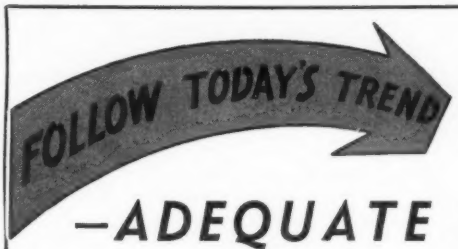
**G. E. Booth,** manager of the St. Louis district office of Cutler-Hammer, Inc., manufacturers of electric safety switches and motor control announces that **E. F. Meyer** is now in charge of the company's Houston territory with headquarters in that city.

* * *

**David C. Prince,** of Philadelphia, since 1931 chief engineer of the switchgear department of the General Electric Company, has been named manager of the commercial engineering department, succeeding the late Vice President E. W. Allen, it has been announced by President Charles E. Wilson.

According to the official announcement, Mr. Prince is assigned responsibility to President Wilson for all commercial engineering service to apparatus customers and for services now provided by the contract service department. He will have general direction of all sales department and district engineers and the contract service department.

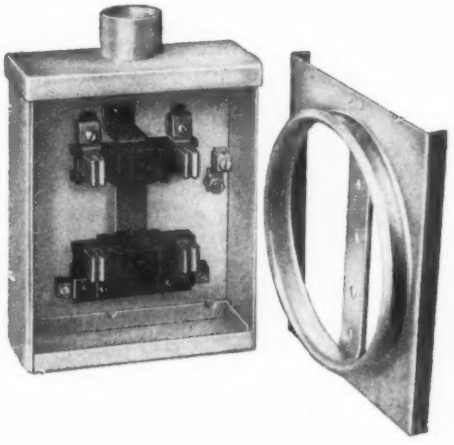
Mr. Prince is the holder of 73 patents and was one of eight G-E engineers recently selected as "Modern Pioneers of Industry" by the National Association of Manufacturers. He is credited with many valuable contributions to the art of the electric ship propulsion, welding, vacuum tubes, mercury arc rectifiers, electric locomotive design, and more recently in oil and air circuit breakers, including the superspeed breakers built at the Philadelphia works for Boulder Dam.


—ADEQUATE WIRING

demands heavier services!

WECO Gives You the Answer—



A SOCKET METER TROUGH with these New Features

- Adequate wiring space; terminals for 4/0 wire.
- Extruded and rolled ring, providing more efficient water-proofing.
- Only one screw required for mounting and locking trim in place.
- All terminals and current carrying parts fastened permanently in box.

Write for Catalog No. 9

WECO ATLANTA

WALKER

ELECTRICAL COMPANY

ATLANTA, GEORGIA

## Trends of the Business

(*Continued from page* 9)

E. Blood, president, the February rise far exceeded the projections of Norge analysts who had expected an increase of between 22 and 23 per cent. Volume for January and February aggregated 50,090 units, an increase of 113 per cent over the 23,700 units sold in the same two-month period of 1939, Blood stated.

"All of our products contributed toward the February increase," he said. "Although electric refrigerators led in total volume and showed gain of more than 35 per cent, they were topped percentagewise by electric washers which registered an increase of over 137 per cent for the month and by gas and electric ranges which rose more than 248 per cent."

* * *

Stewart-Warner Corporation and subsidiaries reported today net profit of $328,202 for the first three months of 1940, equivalent to earnings of 26 cents per share, after provision for federal income tax and Canadian exchange. This compared with net profit of $146,275, equal to earnings of 12 cents a share for the corresponding 1939 period, an increase of 125%.

## Florida Contractors Meet in Orlando

(*Continued from page* 25)

in a number of Florida cities including Jacksonville, Orlando, Lakeland, St. Cloud, Ocala, and in areas served by several of the rural electric membership corporations. Of particular interest was Mr. Ewell's statement that so far as he knew there had been not a single delinquency in the collection of wiring accounts in his territory.

The activities of another government agency were discussed by C. A. Britton, of the U. S. Department of Labor, who discussed the problems of apprentice training. Mr. Britton described the work of the Florida Apprenticeship Council, a group which includes representatives from both employer and employee organizations in the building, printing, and metal trades, as well as representatives of the general public and the state supervisor of trade and industrial education.

The purposes of the Florida apprenticeship council, he said, are: (1) to open to the young people of Florida the opportunity to obtain special training which will equip them for profitable employment and a high type of citizenship; (2) to set up a program of voluntary apprenticeship under apprentice agreements approved by a committee composed of employers and employees; (3) to provide facilities for apprenticeship and guidance in the arts and crafts of industry and trade, with parallel instruction in related and supplementary education; and (4) to promote employment opportunities for young people under conditions providing adequate training and reasonable earnings. He urged the electrical contractors to give further consideration to apprentice training in their own trade.

A discussion of the new branch circuit and feeder rules of Article No. 210 and 220 as approved by the electrical committee for the 1940 National Electrical Code was presented by Joseph Whitner, assistant chief engineer, South Eastern Underwriters Association.

"Making People Do the Things We Want Them To Do," was the theme of an inspirational address by R. B. Roberts, general sales manager, Florida Power & Light Company, Miami. Mr. Roberts pointed out that selling is the most important phase of any job and that it is a collateral occupation paralleling every phase of the electrical industry.

The contractor may not believe that he is a salesman, Mr. Roberts said, but unless he does sell, he will soon cease to exist. He recounted the buying incentives: comfort and convenience, pride of ownership, profit and gain; and asserted that the successful contractor will submerge his own interests in every sale and think first of the customer and his needs.

"What's Going On and What's Going Over," was the title of a talk by Arthur Schanuel, field representative of the National Adequate Wiring Bureau. Mr. Schanuel discussed successful adequate wiring activities in other parts of the country. He directed particular attention to the splendid work being done by the several women's magazines in promoting greater interest in adequate wiring.

The *Woman's Home Companion*,

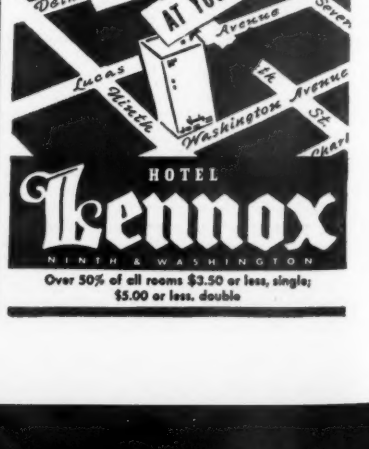
"I'm at hotel Mayfair"
CENTER OF ST. LOUIS BUSINESS
"Fine, that's near my office"
Over 50% of all rooms $3.50 or less, single; $5.00 or less, double

"HOT STUFF?" YES SIR!
BUT THEY DON'T MIND

Linemen don't mind the "Hot Stuff" in high-powered lines when they know MARSHALL'S LINEMEN'S SHIELDS are on the job. Wear resisting rubber compound alternated with a specially constructed canvas jacket assure complete protection, and perfect security.

A line to Linemen Protector Company, 1744 W. Alexandrine, Detroit, Mich., will bring prices and full information on MARSHALL'S SHIELDS, as well as Shoes and Gloves.

MARSHALL'S LINEMEN'S SHIELDS



he said, is telling the housewife of the necessity of planning wiring along with the home and is now featuring a set of wiring plans along with every home plan. Of particular interest is the fact that these plans carry the statement that the wiring has been approved by the National Adequate Wiring Bureau. Particularly effective in helping the contractor sell adequate wiring have been the articles appearing in the *Good Housekeeping magazine* which not only describe modern appliances and how they can be used effectively but have pointed out particularly that poor wiring may make their use ineffective. Articles on such subjects as "Good Wiring Pays Dividends" have carried the wiring story directly to the housewives and should be a most effective sales help for the electrical contractor.

Mr. Schanuel expressed the opinion that the wiring program has had a good start in Florida and should now be ready for a certification plan.

A paper entitled "Let's Speak English" written by Edwin Vennard, Middle West Service Company, Chicago, discussed the needs of simplification in the terms used by the electrical industry. In Mr. Vennard's absence, the paper was read by Secretary McGinnis.

Following closed sessions of both contractors and jobbers on Tuesday afternoon, the meeting was brought to an end with a dinner dance in the San Juan Hotel Tuesday evening. Dr. George W. Allison, of the Edison Electric Institute, New York, was guest speaker on this occasion, his subject being "The Good Will Value of Cooperative Promotion."

---

## Two-Year Service Guarantee on Radios

*(Continued from page 22)*

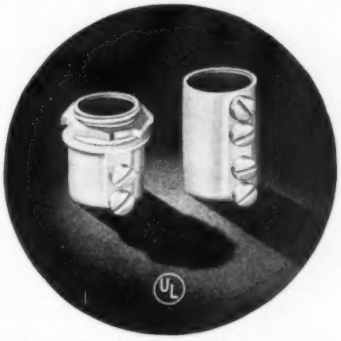
ice or replacements is calculated to be offset by large increases in sales of radios and additional profits.

Since the two-year guarantee is given only upon the purchaser's fulfillment of his agreed payment of each and every installment when due, collection expense is reduced, and repossessions are maintained much lower than under a regular 90-day factory warranty, by the added incentive to keep up payments in order to prevent cancellation of the guarantee. Repossessions are lower because every customer is assured of absolute


# QUICKER *and* EASIER

to install KWIKON Set Screw "E.M.T." Fittings

A Screw-Driver is the Only Tool Needed



Just a few simple turns with a screwdriver and they're on securely. They're easier to reach in "hard-to-get-at" places, too.

Ask your jobber, or write us, about the new, low prices.

*Approved by Underwriters' Laboratories, Inc.*

**KWIKON CO.** 626 W. JACKSON CHICAGO, ILLINOIS

*when Fan Controls*

**TAKE A BEATING!**

*Speed Regulator 1101*

*Ring Type Rheostat 1105*

WARD LEONARD Motor Speed Regulators include everything from the small ring type rheostats for window ventilators to the heaviest industrial blower controls. Well planned arrangements provide circulation of air around resistance elements to dissipate the generated heat. Ward Leonard Speed Regulators will therefore operate continuously, at any speed setting, in the hottest weather without overheating, and if it's automatic control for air conditioning you will be interested in Ward Leonard Multi-Speed Motor Starters.

**SEND FOR BULLETINS OF INTEREST**

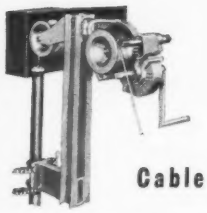
**BULLETIN 1101**
describes Ward Leonard Speed Regulator, ventilated and enclosed types 1/20 to 1/3 H. P.

**BULLETIN 1105**
describes Ward Leonard Vitrohm Ring Rheostats 1 1/2", 2 1/4", 3" and 4" diameter for 30, 50, 100 and 150 watts.

**BULLETIN 4061**
describes Multi-Speed Starters.

**WARD LEONARD ELECTRIC COMPANY**
37 SOUTH STREET MOUNT VERNON, N. Y.
*Electric Controls Since 1892*

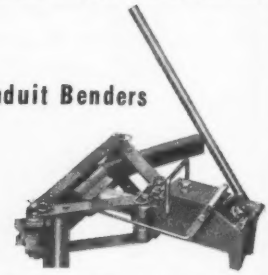
Greenlee TOOLS Are EASIER And FASTER For The Man on the Job



Cable Puller

The Greenlee Cable Puller shown here eliminates the heavy, cumbersome equipment formerly used for pulling in cable. Now, this Greenlee, which anchors right on to the conduit through which pull is made, will make the toughest pulling job easy.

Conduit Benders



The Greenlee Hydraulic Conduit Bender is a portable, light tool, easily carried to the job and set up, that can be operated easily and quickly by one man, and one that will save you time and money on every job.

Knockout Tools

Greenlee Punches and Cutters will enlarge holes in metal boxes easily and quickly, leaving a clean, smooth hole that requires no reaming or filing. Another example of Greenlee tools that help you save time and money on every job.

*Write for Catalog 31E*

GREENLEE TOOL CO.
1707 Columbia Ave.
ROCKFORD ILLINOIS

satisfaction by keeping his radio in good playing condition.

Specific cost figures to maintain this unusual guarantee are not available for publication, but the company's sales since adopting the two-year guarantee are substantially above any previous year in the history of the company, according to a recent statement by Mr. Guernsey. K. R. Williamson is resident manager of the Orlando store and C. Simpson is service manager.

## Sign Shop Investment Brings Good Return

(*Continued from page* 16)

worked out immediately, and in many cases he got the "go-ahead" on his original suggestion.

Those slow to decide were usually won over by being taken to the shop, and permitted to watch the fascinating process of preparing a custom made sign.

In pioneering the field in his community, Mr. Giacomo has found it very advantageous to capitalize on the work already done to seek new installations. To this end, he has had dozens of photographs made of signs conceived and installed by his firm, and placed them on exhibition attracting considerable attention. Photos of finished installations also form a portion of his sales material. Letters from stores and restaurants who have had his signs for a reasonable period of time, testifying to the business increase, and the low cost of operation, have also been accumulated, so that in proposing the investment to an enterpreneur, actual figures and facts as to initial cost, operating cost, and results to be expected can be laid before the prospect.

A wide field for the specialist in neon lighting lies in seasonal decoration for merchandising and promotional purposes, Mr. Giacomo believes. Due to the low cost of neon tubing, and the fact that tubing shaped into a special pattern can later be reclaimed for other purposes, he has been able to stimulate the interest of the local merchants in special seasonal displays and lighting effects, for Thanksgiving, Christmas, New Year, and similar holidays.

Contests offering prizes for the most attractive window displays have furthered this interest, and Giacomo has been called into consultation innumerable times in designing an outstanding display sign. When prize winners are among those he installed, he photographs them and uses them in his arguments for others to participate in the next occasion.

From nothing to $12,000 in the last year is Giacomo's volume in neon lighting, built by graphic demonstration and aggressive merchandising.

## Commercial Cooking Scores in Houston

(*Continued from page* 15)

a delicious hamburger in 43 seconds.

The story of other Houston and South Texas cafe and restaurant operators is very much the same. Christie's Cafe in Houston has even installed an electric ice making machine to make snow ice, using this form of ice instead of crushed ice for cocktails, ice water, ice tea, icing seafoods, etc. But the equipment that is receiving favorable consideration and is actually being installed in worth while volume has been counter cooking equipment; and electrical doughnut fryers are being successfully sold to bakeries and other producers of doughnuts.

THE MATERIALS OF GOOD LIVING ARE BROUGHT TO A FOCUS HERE
Mayfair
ST. LOUIS
LOCATION • COMFORT
FINE FOOD • COURTESY
Over 50% of all rooms $3.50 or less, single; $5.00 or less, double

YOUR PASSPORT to CONVENIENCE COMFORT COURTESY




Over 50% of all rooms $3.50 or less, single; $5.00 or less, double

**FLASH!**

WRITE FOR YOUR FREE BOOKLET ON THE NEW

**JOBBERS ATTENTION**

**—CENTURY—**
FLUORESCENT LIGHTING EQUIPMENT

*WRITE TODAY*

**TWENTIETH CENTURY ENGINEERING CO.**
MANKATO MINNESOTA

SOUTHERN REPRESENTATIVE
J. B. Morrison, Bona Allen Bldg., Atlanta, Ga.

**NO WASTED HEAT WITH CHROMALOX UNITS**

See nearest representative
ATLANTA, Ga. — C. B. Rogers, 1000 Peachtree St.
DALLAS, Texas — Elgin B. Robertson, 1215 N. Zangs Blvd.
RALEIGH, N. C. — W. R. Phillips.
OKLAHOMA CITY, Okla.—Paul Berry, 3128 N. W. 26 St.

TWO-UNITS-IN-ONE gives the right cooking area for every size utensil. It's an economy feature that makes a hit with range buyers. Sell ranges equipped with Chromalox units. Use them for replacements too—they fit all ranges. Write for the range-salesman's handbook — "How to Sell More Ranges."

EDWIN L. WIEGAND CO., 7600 Thomas Blvd., Pittsburgh, Pa.

MODEL 16
$12.00

**TEN-AMPERE TIME SWITCH**

WITH SELF-STARTING SYNCHRONOUS MOTOR
Ideal for Time-Controlling
SIGNS—WINDOW LIGHTS
FLOOD LIGHTS, Etc.

Here is one of the greatest values ever offered in a Time Switch. Standard model for 110-volt, 60-cycle **Alternating** Current. For 220 volts, $1.00 additional. Can be furnished with extra set of trip levers for $1.00

A companion of this model is the No. 16-S, for use on 110-volt **Direct** Current, at $15. Equipped with spring-wound, ten-day precision movement.

**Time Switches—FLASHERS—Interval Timers**

*Write for Information and Discounts*

AUTOMATIC ELECTRIC MFG. CO.
MANKATO • MINNESOTA

**C. B. ROGERS**

ELECTRICAL HEATING ENGINEER
CHROMALOX
ELECTRICAL HEATING UNITS
and
CHROMALOX
EQUIPPED PRODUCTS

1000 PEACHTREE STREET
ATLANTA, GEORGIA

**THE SALES PRICE**

*of an article is often from two to ten times its cost to manufacture.*

That one fact indicates the opportunities to increase sales and profits through better distribution and merchandising.

ELECTRICAL SOUTH, through its editorial pages, points the way along constructive lines and presents information, ideas, and plans based on the intimate contact of its editorial staff with the electrical utilities, dealers, and contractors of the South. Coming issues will contain many important merchandising articles relating to sales training, demonstrations, canvassing, appliance servicing, and displays; engineering features describing modern trends in transmission, distribution, and utilization; and many items of special interest to electrical contractors on both practical and technical subjects.

*Take advantage of these valuable articles by reading your copy of ELECTRICAL SOUTH carefully each month. If you are not already a subscriber, it costs only $1.00 for one year or $2.00 for three years.*

**ELECTRICAL SOUTH**
GRANT BUILDING ATLANTA, GA.

**..3 C's**

**YOU CAN PROFITABLY REMEMBER**

It's an easy rule to remember when you come to Cleveland. Head right for friendly Hotel Carter and you're sure to enjoy your stay in this friendly city.

600 outside rooms. All with bath and circulating ice water.
3 air-conditioned restaurants.
EXCELLENT CONVENTION FACILITIES
Single from $2.75 • Double from $4.00

**HOTEL CARTER**
**Prospect near Ninth, Cleveland**
J. BINGHAM MORRIS, Managing Director
Affiliated with American Hotels Corporation of N. Y.
J. LESLIE KINCAID, President

# ADVERTISER'S INDEX

*The Advertisers' Index is published as a convenience, and not as a part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert.*


A

Adam Electric Co., Frank ... 5
All-Steel Equip. Co. ... 35
Aluminum Co. of America ... *
American Coolair Corp. ... 49 and 51
American Steel & Wire Co. ... 53
Anaconda Wire & Cable Co. ... 6
Automatic Electric Mfg. Co. ... 63
Autovent Fan & Blower Co. ... 48

B

Buffalo Forge Co. ... 48

C

Carpenter Mfg. Co. ... *
Columbia Steel Co. ... 53
Crescent Insulated Wire & Cable Co., Inc. ... 44

D

Dolph Co., John C. ... *

E

Edison General Electric Appliance Co. ... 37

F

Frederick Iron and Steel Co. ... *

G

General Cable Corp. ... 4
General Electric Co., (Insulating Materials) ... *
General Electric Co., (Lamps) ... 10
General Electric Co., (Ranges) ... *
General Electric Co., (Refrigerators) ... *
General Electric Co., (Water Heaters) ... 2
General Electric Co., (Wiring Materials) ... Back Cover
Graybar Electric Co. ... *
Greenlee Tool Company ... 62

H

Hall Mfg. Co. ... 49
Hazard Insulated Wire Works ... 1
Hotel Carter ... 63
Hotel Lennox ... 60 and 62
Hotel Mayfair ... 60 and 62
Hotel Wolverine ... *
Hubbard & Co. ... 43
Hunter Fan & Ventilating Co., Inc. ... Front Cover

I

Ideal Commutator Dresser Co. ... 58

K

K. & H. Mfg. Co. ... 48
Knox Porcelain Corp. ... *
Kwikon Co. ... 61

L

Linemen Protector Co. ... 6

M

Manker Products Co. ... 51

N

Norge Division ... 39

O

Okonite Co. ... 1

R

Reed Unit-Fans, Inc. ... *
Rogers, C. B. ... 63

S

Sangamo Electric Co. ... 8
Signal Electric Mfg. Co. ... 48
Square D Company ... 65

T

Twentieth Century Engineering Co. ... 63

U

United States Steel Co. ... 53

V

Victor Electric Products, Inc. ... 50

W

Walker Bros. ... 3
Walker Electrical Co. ... 59
Ward Leonard Electric Co. ... 61
Westinghouse Elec. & Mfg. Co. (Full Line) ... 41
Westinghouse Elec. & Mfg. Co., (Ranges) ... *
Westinghouse Elec. & Mfg. Co., (Refrigerators) ... *
Westinghouse Elec. & Mfg. Co., (Water Heaters) ... *
Wiegand Co., Edwin L. ... 63
Wiremold Company ... 55

Y

Youngstown Sheet & Tube Co. ... Inside Front Cover